HOARD'S DAIRYMAN

THE NATIONAL DAIRY FARM MAGAZINE

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The Ayrshire Contest Class

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Our 65th year of reliable service to American agriculture

Volume 96, No. 2 Fort Atkinson, Wisconsin January 25, 1951

Some farmers want an "OPEN CENTER" TIRE...

Other farmers want the "TRACTION CENTER" TIRE...

ONLY Firestone has both!

YOU'LL find exactly what *you* want—in tread design, in traction power, in wearing qualities, and in extra-value features—when you buy Firestone tires. In BOTH Firestone Champions—the Open Center and the Traction Center—you'll find *all* of these outstanding advantages.

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- **Full-Width Tread** for full tread life and power.
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- **Dual Shock Protectors** for full body life.

Yes, you can have the tread design of your choice and get the finest in quality, too, when you buy Firestone Champions. Only Firestone provides you with this choice. Only Firestone has all of these extra advantages. So when you need tires, get Firestone Champions, either in Open Center or in Traction Center design.

. . . ALWAYS BUY TRACTOR TIRES BUILT BY FIRESTONE, ORIGINATOR OF THE FIRST PRACTICAL PNEUMATIC TRACTOR TIRE

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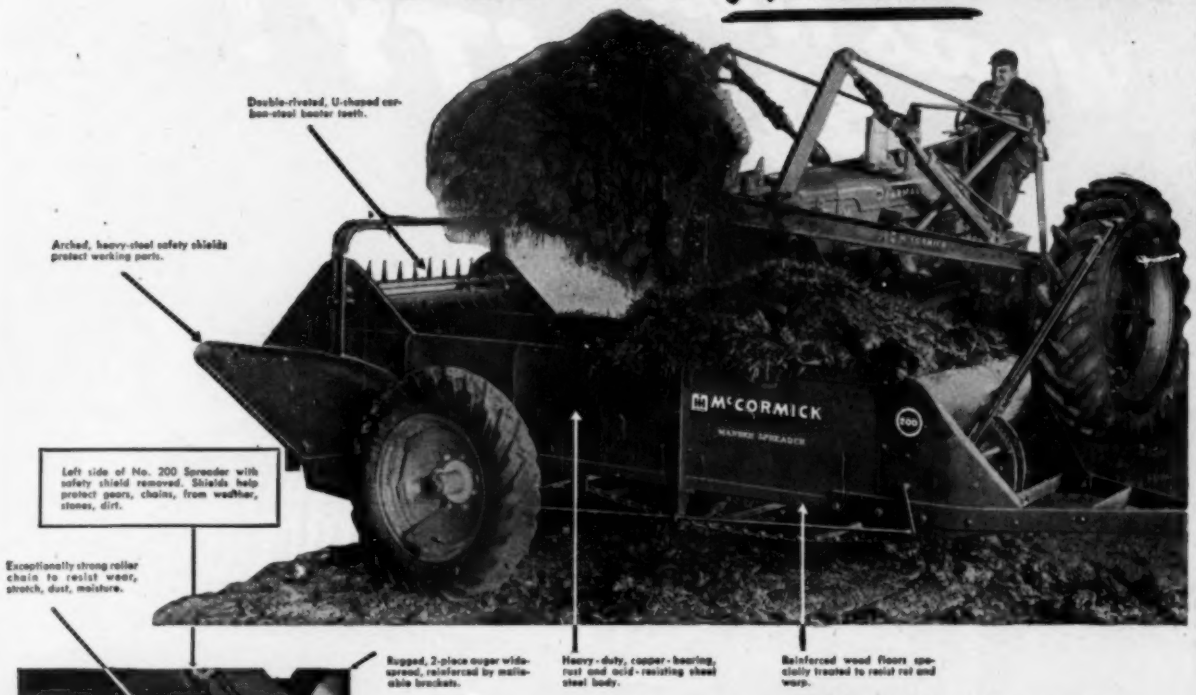
Double-riveted, U-shaped carbon-steel beater teeth.
Arched, heavy-steel safety shields protect working parts.
Left side of No. 200 Spreader with safety shield removed. Shields help protect gears, chains, from weather, stones, dirt.
Exceptionally strong roller chain to resist wear, stretch, dust, moisture.
McCORMICK
200
Rugged, 2-piece auger wide-spread, reinforced by malleable brackets.
Heavy-duty, copper-bearing, rust and acid-resisting steel steel body.
Reinforced wood floors specially treated to resist rot and warp.
Heavy-duty, draft-reducing axle and beaker roller bearings.
Rigidly mounted, drop-forged ratchet, cams, and driving pawl.

Choose a *McCormick* LOADER and SPREADER

There's no back-breaking work in manure-hauling when you use these McCormick time and labor-savers—the new No. 31 Power Loader and the No. 200 Spreader. Without leaving your Farmall tractor seat you can break loose 4 or 5 huge scoops full of manure, dump them in the spreader, then hitch on (fits any drawbar), and take off for the field. Instead of a half-hour to an hour of hard, back-bending work with pitchfork and shovel, the entire loading operation has taken only 5 or 6 minutes!

Equip your Farmall H, M, or MD Tractor with the New McCormick No. 31 Power Loader, and make these tough jobs easy; scoop all kinds of grain, sand, earth, and snow; build and maintain roads, terraces, dams, and runways; dig drainage ditches; fill gullies.

Then, too, you can lift and move feed bunks, hog and poultry houses, motor assemblies, baled hay; clean and maintain feed lots; doze out stumps and stones; drive and pull fence posts; do many other tough, back-breaking jobs from your tractor seat!

Check the 8 Features above. They show why the No. 200 Spreader lasts so many years longer

And the No. 200 Spreader is only 37 inches high for easy hand loading . . . its large capacity makes it ideal for the average to large dairy and livestock farmer . . . it spreads a wide, uniform blanket of shredded manure—from wet bedding to the toughest chunks—at any rate you want from 5 to 25 loads an acre and its accurate load balance, when hitched to your tractor, gives you close turning in feed-lot, barn, or field.

The full line of McCormick Spreaders includes 4 others—all as ruggedly built as the sturdy No. 200—designed to fit the varying needs of feeders and dairymen. These are:

No. 200-F. 75 bu. Designed for the dairyman, to handle liquid manure.

No. 200-H. 65 bu. Four-wheel, for horse or tractor power.

No. 100. 40 bu. For small tractors or for minimum spreading requirements.

No. 100-H. 40 bu. Three-wheel, for horse or tractor power.

See this rugged line of spreaders, see the work-saving No. 31 Power Loader, and examine world-famous Farmall Tractors at your IH dealer. International Harvester Company, Chicago 1, Illinois.

INTERNATIONAL HARVESTER

FACE to face with this 1951 headliner—you know that it has a fresh and sparkling beauty such as you've never seen before.

There, sure enough, is a bumper—massive, strong. There are 25 sturdy, stamped-steel grille bars—mounted to "give" and come back unharmed. There, boldly standing guard, are two stout and stunning "bumper bombs"—and for good measure, two more husky uprights flank the license plate.

There, in short, is *beauty with a duty*—to give the finest front-end protection yet devised.

But that, friends, is only the beginning.

Proudly wearing this "push-bar" forefront, you find a stellar line-up of SPECIALS, SUPERS and ROADMASTERS which set new standards of all-round satisfaction.

Standard equipment, accessories and trim illustrated are subject to change without notice.

New "white-glow" instrument markings give greater clarity at night. New glare-and-heat-reducing glass† tames the sunbeams in daytime driving.

New power gives the SPECIAL record thrift and performance. New double-depth Foamtex cushions give the ROADMASTER restful new luxury. New fabrics smarten all interiors—and new ports embellish the fenders of all Series.

†Optional at extra cost—available on most models. (Not presently available in California or Massachusetts)

Yes, there's plenty new to thrill you in these spanking new Buicks—but don't overlook the tried-and-true thrill of Fireball power—and Dynaflow Drive—and the unsurpassed smoothness of riding on coil springs on every wheel. There is still no other car in the world with these standout features.

Any way you size it up, the smart buy for '51 is Buick. Go see your Buick dealer now, and find out what gospel truth that is.

BUICK *Division of* GENERAL MOTORS

No other car provides all this:

DYNAFLOW DRIVE—saves strain on driver and car • **FIREBALL POWER**—high-compression, valve-in-head engine gets more good from every drop of fuel • **WHITE-GLOW INSTRUMENTS**—greater clarity at night • **PUSH-BAR FOREFRONT**—combines smart style and unsurpassed protection • **TORQUE-TUBE DRIVE**—steadies ride, improves driving control • **SELF-ENERGIZING BRAKES**†—hydraulic—multiply pedal-pressure five times at brake drum • **4-WHEEL COIL SPRINGING**—cushions ride, saves servicing costs • **DUAL VENTILATION**—outside air fed separately to right or left of front compartment • **DREAMLINE STYLING**—tapered, car-length fenders, gleaming sweepspears on most models • **Plus:** Self-locking luggage lid, StepOn parking brake, two-way ignition lock, Safety-Ride rims, Hi-Poised engine mounting, Body by Fisher.*

**Standard on ROADMASTER, optional at extra cost on other Series.*

WHEN BETTER AUTOMOBILES ARE BUILT BUICK WILL BUILD THEM

"Smart Buy's Buick"

Your Key to Greater Value

HOARD'S DAIRYMAN

The National Dairy Farm Magazine

Publishers
W. D. Hoard & Sons Co.
Fort Atkinson, Wis.

W. D. Hoard

Founded by
W. D. Hoard, 1885
Fort Atkinson, Wis.

W. D. HOARD, JR.
General Manager

W. D. KNOX
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One of the important considerations in judging dairy cattle is the head, particularly in the Ayrshire breed. The head should be clean-cut, with a broad muzzle and bright eyes.

For our cover we chose this Strohmeyer-Carpenter head picture of Talisman Emerald's S. Trinket, from Meredith Farm, Massachusetts. Not only does she have an outstanding Ayrshire head, but she made one of the most impressive records of any Ayrshire female on the 1950 show circuit. She was first prize four-year-old, senior and grand champion cow, as well as winner of the best udder class at the International Dairy Exposition. In addition, she was an easy top in the four-year-old class and winner of the best udder class at the Dairy Cattle Congress. At the Eastern States Exposition she topped the four-year-old class and was made reserve grand champion female.

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Published the 10th and 25th of each month by W. D. Hoard and Sons Company, Fort Atkinson, Wisconsin. Entered as second-class matter July 25, 1902, at the post office at Fort Atkinson, Wisconsin, under the act of March 3, 1879.

Subscription Prices. United States and possessions, 5 years, $2.00. One year, $1.00. U. S. prices also apply in Costa Rica, Cuba, Dominican Republic, Guatemala, Haiti, Mexico, Nicaragua, Panama, Honduras, Salvador, and South America, except the Guianas. In all other countries, $2.00 per year.

The receipt of Hoard's Dairyman is notification that money on subscription has been received. The label on paper will show date to which subscription is paid. Changes of address should reach us three weeks in advance. Include old address.

Unwholesome, immoral, and questionable medical advertising is excluded. A sincere effort is made to carry advertising of only reliable people. We will always take it as a favor to be notified promptly whenever any advertiser's dealings with the subscribers are not in good faith or evidence a lack of business honor. Advertisers recognize the readers of Hoard's Dairyman as an up-to-date class of farmers, and we hold our columns for the patronage of only those with whom our readers can deal with profit and satisfaction.

Hoard's Dairyman is published on the 10th and 25th of each month. Advertising copy for the 10th of the month issue must be received before the 15th of the preceding month. For the 25th of the month issue, copy must be received by the 1st of that month.

"Best Chopper of Them All"

... Say Farmer Owners*

GEHL
SINCE 1859
PRONOUNCE IT "GALE"

1. CHOPPED HAY . . . with hay pickup and own motor.

Quick Change-over FOR 3-WAY HARVESTING

GEHL FORAGE HARVESTERS

● For years, users have been praising the chopping ability of the Gehl Forage Harvester. *It's one of the reasons why Gehl has sold more forage harvesters than any other independent manufacturer.*

The Gehl is one of the *first* forage harvesters to be introduced and has proved itself in use by thousands of farmers. Gehl is also a pioneer in forage-cutting machinery and its silo fillers and hammer mills have been famous for over half a century. Now the Gehl Forage Harvester, backed by this experience has won a reputation for better chopping . . . fast, clean, uniform chopping that makes better forage . . . silage that packs well and keeps well. Before you buy a forage harvester, see the Gehl . . . compare . . . talk with Gehl owners. **Testimonials sent on request.*

2. GRASS SILAGE . . . with mower-bar attachment and power take-off.

3. CORN SILAGE . . . with row-crop attachment and own motor.

ANY OF THE 3 GEHL UNITS ATTACHED IN A FEW MINUTES!

HAY PICKUP . . . picks up dry hay, straw or grass for hay or silage . . . chops it and blows it into wagon.

MOWER BAR . . . for grass silage. This newly-developed Gehl Attachment mows and chops the usual low-growing crops such as Alfalfa and Brome, also the new tall-growing "balanced silage" mixtures such as Millet, Sudan Grass, Soy Beans, Sorghum and Cane, sowed broadcast as illustrated.

ROW-CROP ATTACHMENT . . . cuts standing Corn, Cane, etc., for silage. Patented Auger-Type Gatherers (instead of chains), *exclusive* with Gehl . . . no breakdowns . . . less tendency to knock off ears.

A COMPLETE JOB FROM FIELD TO STORAGE

● One basic harvesting machine takes all 3 quick changeover units.

● Powerful, tilt-up *Gehl Blower* elevates to highest silo or mow.

● Power take-off from blower or separate electric drive operates *Gehl Self-Unloading Wagon* and others.

● Only Gehl gives you all these advantages.

Gehl self-unloading wagon and blower.

FREE BOOK . . . Paste this on a penny post card and mail today.

GEHL BROS. MFG. CO., Dept. MA-520
West Bend, Wisconsin

Please send me FREE BOOK giving description of Gehl Forage Harvesters, Blowers, Forage Wagons and name of nearest dealer ☐ Send *Free Wagon Box Plans* ☐

Name .....

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.....

FREE WAGON PLANS

THERE'S NOTHING BETTER THAN A GEHL!

General Mills Larro THRIFTY FEEDING FACTS

2,382 Lbs. More Milk Per Cow Per Year After Change To Larro

Mr. Bassett and his helper, Lester Davis, put some drama into their story by stacking up 28 cans of milk behind one of their cows. The cans represent the extra production from each cow after the herd was put on Larro Dairy Feed.

HERD AVERAGE CLIMBS STEADILY IN EACH OF THREE YEARS

"During the past three years," says Mr. Milton E. Bassett, Jr., of North Pomfret, Vermont, "I have increased my herd's milk production 2,382 pounds of milk per cow. This is an increase of more than 28 cans of milk per cow and a total increase of 121,482 pounds of milk from my herd of 51 Jersey milkers since I started using Larro Dairy Feed.

"My milk production increases have proved to me that Larro Dairy Feed and the Larro Feeding Program can make me more profit over feed cost.

"On 51 milkers here is my herd's average yearly increase per cow:

YEAR	MILK PER COW	%	BF	FEED	PROFIT
1945-46	5,066 lbs.	4.01	[illegible] lbs.	[illegible] lbs.	$236.00
*1946-47	8,716 lbs.	4.03	[illegible] lbs.	2,790 lbs.	209.00
1947-48	7,080 lbs.	3.17	365 lbs.	3,020 lbs.	260.00
*1948-49	8,240 lbs.	4.05	[illegible] lbs.	3,190 lbs.	209.00

*The decrease in profits is due to the drop in milk prices. Note the increase in milk pounds and butterfat pounds."

STORY OF AVERAGE HERD

This herd of purebred and grade Jerseys is an example where Larro Dairy Feed and the Larro Feeding Plan have brought about vastly improved production and profit over feed cost. Although *money* profit in the years 1946-47 and 1948-49 was lower than the preceding year, it's important to notice how much lower the profit in those years *would have been* had production remained at the 1945-46 level. More and more owners of average herds are discovering that the results they get with Larro are even more startling than the results reported by owners of highly bred-up herds. To them improved production and higher profits are just as important as blue ribbons. To most dairymen, a better living from dairying takes first place.

How To Handle Special Feed Needs

You feed mainly for good body maintenance and top milk production. But there are special cases where other reasons are important. For example, first lactation heifers need extra nutrients to continue body growth right along with good condition and maximum production. This can normally be taken care of simply by feeding ½ lb. to 1 lb. extra of Larro Dairy Feed per day during all of the first lactation period, in addition to the daily feed requirements for maintenance and milk making.

For Unborn, Growing Calves

Likewise, cows safely with calf need extra nutrients. After the first three months of pregnancy, the cow should receive 1 lb. extra of Larro per day for the growing, unborn calf. If this is not provided, milk production may shrink unduly as the cow side-tracks more and more nutrients to nourish her calf.

For Out-Of-Condition Cows

It doesn't take a cow long to get out of condition during a period of sickness. Following such a time, extra nutrients are often needed to get her quickly back to top production. How much extra is needed must be determined by your own good judgment, since it would naturally vary with each animal.

Larro Dairy Research Workers List 4 Common Feeding Faults

Thousands of herd "audits" by Larro Representatives and analyzed by Larro Research Scientists reveal the following common feeding faults:

1. Improper conditioning of dry cows.
2. Feeding too much grain too soon after cows freshen.
3. Underfeeding cows—either on grain or roughage.
4. Failing to feed extra roughage with pasture.

Feed the Larro way and avoid these errors.

D-7-50

General Mills

Farm-tested FOR GREATEST PROFIT OVER FEED COST . . .

Larro FEEDS

Address General Mills, Larro Feeds, Dept. 9 Minneapolis 1, Detroit 2, San Francisco 6, Kansas City 6

DO YOU "ROLL YOUR OWN" BLEND?

Many dairymen prefer to make their own dairy ration using their own home-grown grains. Don't miss the chance to get General Mills Larro quality into your own "blend." By carefully following simple Larro directions, you can help make sure that your cows get all the proteins, minerals, and other nutrients which are either deficient, or lacking entirely in home-grown grains.

Use Larro 32% Dairy Concentrate

When you buy your Larro 32% Dairy Concentrate, ask your Larro dealer for proper mixing directions. Just pick out the formula which best suits your needs. Be sure your formula is properly balanced by using Larro 32%.

Mix it with:

Ground Ear Corn
Ground Shelled Corn
Ground Barley
Wheat Bran
Ground Oats
Ground Wheat
Dried Beet Pulp
Other home-grown grains

Opinions, Brickbats, Bouquets

New York vs. South Dakota

HOARD'S DAIRYMAN:—In reading your November 25, 1950, number I see where Perry Clifford of South Dakota thinks he has a record on milking cows. I have one only I haven't kept it up-to-date.

For 15 years I worked for the Walker-Gordon Milk farm at Plainsboro, N. J., as a milker. I averaged 80 cows per day, milking by hand. I milked 2,400 cows per month, or 28,800 per year. At one time I averaged 100 cows daily for six months before I went there. I milked an average of 15 to 20 cows per day since I was 18 years old. I am now 62 years old. Haven't milked since I was 60. One time my wife and I milked 50 cows twice a day with no help.

I think I have milked more cows than Mr. Clifford has even seen.

New York. FLOYD H. DIBBLE.

Vaccinate at 12 Weeks

HOARD'S DAIRYMAN:—I was reading your article in Hoard's Dairyman, under date of November 25, written by Dr. P. L. Beamer, Illinois College of Veterinary Medicine, in regard to the vaccination of pigs two weeks of age for erysipelas.

The experience of some veterinarians from vaccinating of pigs at this age has been rather disappointing. The immunity may expire in the pigs in about six months or before they are ready for market. Some veterinarians who have had a lot of experience with erysipelas in swine are not vaccinating until the pigs are about 12 weeks of age unless infection appears in the herd.

Erysipelas differs from hog cholera in that it does not spread through the herd rapidly and infected animals respond to the serum treatment.

Iowa. C. H. BANKS, D.V.M.

A Scheme for the Miserly

HOARD'S DAIRYMAN:—Here's another nickel's worth on the subject of bedding our dairy cows. The plank idea seems to have prompted several farmers to write you their ideas.

It is my humble opinion that these schemes for keeping the bedding in place are schemes developed for and by the man who is miserly with the bedding. Any farmer who expects to have an even two inches of bedding over the stall and none in the gutter is sure in for a bad time unless, as has been suggested, he should build a firm manure pack ahead of a plank or some other retainer.

I know one farmer who beds his gutter first and the stall straw stays in place very well. He tells me that he'll never, again, be caught cleaning the gutter with a shovel and that he very seldom gets slapped with a wet tail since using bedding in the gutter.

This man buys his straw as he lives on a river bottom (James River) where he has had little success with small grain. He feels that the

cost of the straw is small compared to his greater ability to get all the fertilizer to the field where it belongs. A good deal like learning to feed our cows well for better production and better returns over feed costs, we can very well look into the returns from liberal bedding.

I can't imagine anyone writing to you without congratulating you on the fine magazine you write for us. Merry Christmas to you and a prosperous New Year.

South Dakota. DON H. WILSON.

Help Shortage

HOARD'S DAIRYMAN:—I just read your article on page 874 of the December 10 issue about help shortage and would like to tell you something of our help problems here. We are located in South Texas about 70 miles from the Mexican border and about the same distance from Corpus Christi, Texas.

My son and I run a dairy and have from 80 to 90 cows milking all the time (my age is 82 years). We are located near one of the largest oil fields in the country and it is impossible to get any native help that we can depend upon. We can get plenty of good help from across the border but they can only get a permit to stay six months. Their permit can be renewed at the end of the first six months but at the end of the year they are forced to return to Mexico. We have found some of the best dairy hands among them that we ever had but after we have them trained it is only a short time until our government forces them to go back to Mexico and the U. S. will not allow them to bring their families along with them. There is a big demand for our milk at Corpus Christi as there is a large naval air base there and it is a growing town.

If you could use any influence in getting this restriction lifted, the people here would surely appreciate your help. We need the help and the Mexicans need our dollars.

Texas. I. I. HOWELL.

Wants Hoard's Dairyman in Finland

Kaj Wallen of Finland spoke to the Junior Farm Bureau of Clayton County, Iowa, during his time in the United States as an exchange student. His audience must have been interested in what he had to say, and just as interested to see that he keeps posted on dairy developments in America. They are sending Kaj a subscription to Hoard's Dairyman at his request.

Chemicals on the Farm

HOARD'S DAIRYMAN:—The veterinary column of the December 10 Hoard's Dairyman has a question concerning the possibility of ill effects to cattle from grazing in apple orchards. Had the orchard in question been sprayed? It seems to me poisons added should be considered before inherent plant poisons.

I recall purchasing a chicken from a peach grower a few years ago. The chickens had the run of the peach orchard and the fruit was ripe at the time. The orchard had received the usual amount of spray treatment. What a messy state of disintegration and adhesions we ran into when we opened that chicken! But, after considering the diet of the chicken, we concluded that we could hardly expect anything else. The owner of the orchard had several children who were given free rein to eat all the unwashed and unpeeled fruit they wanted. One little girl was troubled with some very "strange" symptoms which their doctor could not explain.

Hoard's Dairyman seems to be a little more original and independent than most farm papers. For that reason, I should like to discuss with you the subject of possible milk contamination from our free use of chemicals around the dairy.

What I am driving at is this, as long as medical men deal chiefly with symptoms instead of causes, the dairy industry stands to be due for an awful slump for, if this continues, the dairy products are going to be the first foods suspected of contributing to certain pathological conditions. People are bound to cut down on their dairy products, especially butter. Therefore, it is to the interests of the dairy industry that you do all you can to stop this contamination of your products through contaminated fodder, contaminated utensils, synthetic feeds, and through use of sprays around the animals and farm buildings.

Please do not misunderstand me. There is a place for chemicals on farms, too. Your paper carries more warnings than most on their proper usage. But if dairy and other farm products are going to be safe to use, there must be a more general knowledge of their proper use.

Illinois. MRS. E. G. GODDARD.

Supports Our Views

HOARD'S DAIRYMAN:—People are more apt to condemn than commend (Donald M. Barnes, page 903, December 25 issue). I should like to give you some moral support on your views.

It is very alarming to read of England's socialist agriculture, whereby a farmer raises what he is told, when he is told, or he is dispossessed.

It is also somewhat alarming to view our own government's gradual take-over of farm control. Some of this government aid may be necessary and desirable to build up soil fertility, and as an educational program to show farmers the desirability of using good conservation methods. Of course, you can say that English socialism could never happen here, but we must be darned awful sure that it doesn't happen here.

I believe it is up to farm organizations and farm papers to point out to farmers the dangers of too much control. Freedom of action and self-decision have never come with free handouts and never will.

New York. RAYMOND DANN.

Come Now!

HOARD'S DAIRYMAN:—I have your letter of October 1950 in which you say a friend of mine tells you I am a dairyman. So you would like me to read Hoard's Dairyman.

Come now! How do you think I ever became a dairyman if I had not read Hoard's Dairyman these forty years? How do you think I got the inspiration to milk in cold, storm, and sleet without Hoard's Dairyman? How do you think I developed a herd of mature Guernseys whose high DHIA records average 11,764.5 lbs. milk, 618 lbs. fat in 330 days? How do you think I developed Gladys of Ham Farm, whose DHIA four-year-old, 305-day record is 17,562 lbs. milk, 1,016.8 lbs. fat without Hoard's Dairyman? The 1950 herd average is 10,177 lbs. milk, 531.9 lbs. fat DHIA.

Virginia. R. R. C.

ALL IN ONE MINUTE

"NO FINER AND EASIER IMPLEMENT HOOK-UP ON THE MARKET"
. . . says Walter Dyrland. "Farmers around here like the Case 3-point Eagle Hitch. The Latch-On implements are unexcelled for sturdiness and quality."

"FOR MY MONEY . . . IT'S THE GREATEST BUY IN TRACTORS"

. . . says M. V. Harris. "My Model 'VAC' has given perfect satisfaction in my belt work, power take-off and drawbar work. It requires very little service, and fuel costs are amazingly low on all farming operations."

See for yourself how easy the Eagle Hitch latches onto implements . . . how it pulls plows at even depth in uneven ground . . . how its balanced down-pull helps *both* steering and traction. See how front-mounted Masterframe implements follow front wheels instantly . . . how clean you can cultivate . . . how well you can see what you are doing. Besides the great variety of Case implements, there are loaders, scrapers, sprayers, post hole diggers, etc., built by other manufacturers for the "VAC." Plan now for the work ahead . . . see your Case dealer.

WIDE CHOICE OF MOUNTED IMPLEMENTS

Latch-On implements for "VA" Series low-cost 2-plow tractors include regular and 2-way moldboard plows, disk plows, tandem and offset disk harrows, 2-row lister, disk bedder and cultivator, many tool-bar implements, 7-foot mower, narrow-row planters. Front-mounted Masterframe implements include runner and buster planters, standard and narrow-row cultivators.

CASE

SEND FOR BIG CATALOG

PASTE ON PENNY POSTCARD AND MAIL

NAME

POSTOFFICE

STATE

NEW B.F. Goodrich

Duane Auer of Eldorado, Kansas, says, "We find we have much less slippage with B. F. Goodrich Power-Curve tires. They have a better grip in sandy soil, hold tight in mud."

POWER-CURVE TIRES

OUTPULL OTHER LEADING BRANDS —LAST LONGER

VICTOR AUER and his son, Duane Auer, farm 1200 acres on Route 4, Eldorado, Kansas. Here they raise corn, barley, sargo and livestock. Altogether, they have about 350 steers, cows and calves.

"When we were in the market for tractor tires," said Duane Auer, "we gave much thought to the type of soil and conditions under which we work . . . so we picked the new B. F. Goodrich Power-Curve tires. Our experience shows they have a much better grip in sandy soil and also hold tight in mud. We find that we have much less slippage. All of our trucks, tractors, drills and other machinery have B. F. Goodrich tires."

Farmers everywhere like the extra traction and longer wear they get from B. F. Goodrich Power-Curve tires. On this tire each high, tapered cleat has an arrowhead nose that digs right in. The curved cleats are high at the shoulders, high at the center—actually higher at the center than the cleats of the two other leading makes.

The cleats of the open center tread are evenly spaced, the same distance apart at the center as they are at the shoulders. That makes the tread mesh with the soil like the teeth of a gear. And the whole tread is flexible. It gives as the tire rolls. Dirt drops out! Tread stays clean!

Because there's more rubber in the tread and because the cleats don't bend and scrub, you get longer wear. Many farmers will get as much as a year of extra wear with this new tire.

For greater traction and longer life, replace with this powerful new tire. And specify B. F. Goodrich tires when you buy a new tractor. *The B. F. Goodrich Company, Akron, Ohio.*

Save with this new kind of front wheel tire

This new type front wheel tire first made its reputation in the lister corn country. Now farmers everywhere want it. It follows the furrows or rides the ridges. Protects your crops. Makes steering easier. Tread is specially compounded for extra-long wear. See the BFG retailer.

HOARD'S DAIRYMAN
Founded in 1885

Dairy Type

what is it worth to You?

Classification has it all over the show ring for improving type in dairy cattle. However, it has shortcomings that should be corrected.

by George Hyatt and W. G. Tyler

SOME folks argue that the show ring has done more harm than good in the development of profitable dairy cattle. They point to the use of unscrupulous practices and the failure to consider how much an animal has produced. They believe, too, that overfitting has been detrimental to the animals shown.

Others assert that too few dairymen are able to show their cattle for the show ring to be of any real force in the improvement of the rank and file dairymen's herd.

Despite these arguments, and the unwillingness of certain individuals to admit it, the fact still remains that dairymen seek out the best type animals as additions to their herds, and are willing to pay higher prices for the "typy" animals. The eye appeal of dairy cattle remains an important factor in selecting breeding stock. It is true, too, that our dairy type standards have been set in the show ring.

Recognizing the limitations of the show ring, the first real useful basis upon which to select for type became available in 1929 under a program known as type classification. It was inaugurated by the Holstein-Friesian Association of America. Like the DHIA testing program, which offers an accurate method for measuring the production of dairy cows, type classification seems the most substantial basis yet devised upon which dairymen can build better type into their herds. Well qualified, official type classifiers are employed by the breed associations to visit breeders' herds and rate individual animals according to their type.

In terms of years, type classification is a young program. It is too early to appraise its real worth to the dairy cattle industry. Time must pass; generations of cattle must be bred before the final analysis can be made. Like any new program, it can be improved through constantly strengthening its weak points and by keeping an ever vigilant and active research program going to solve the many problems that will arise or that have not yet been answered. From a dairy cattle improvement viewpoint let us appraise the type classification program in the light of the information we now have available.

Type classification solves many problems relative to type that the show ring cannot do:

1. It includes a much larger number of cattle, thus providing more pedigree information so that the inheritance of type can be studied.

2. It doesn't call for any special conditioning or showing of an animal as is common in the show ring. It stresses instead the factors in type that are supposed to go hand in hand with long-lived, healthy, heavy consuming and heavy producing cows. It also gives less emphasis to stage of lactation and proper fleshing, as is commonly stressed in our fairs and exhibits.

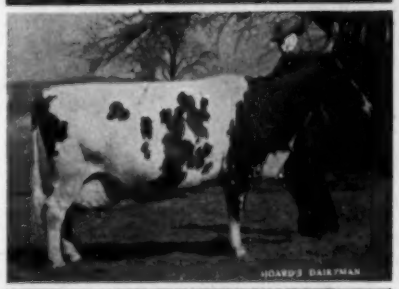
3. Certain definite standards are followed by a few specially trained judges who make the ratings. The judges are trained to compare each animal with an ideal scoring 100 points and then to place her in one of five groups, Excellent, Very Good, Good Plus, Good, or Fair, depending upon the score. Type classification is more of a science than show ring judging.

Results of studies by the various breed associations have shown that as a group, the cows with the high type ratings are the highest producers. However, this relationship is not as great as some breed associations lead their dairymen to believe. To appraise this matter fairly, records should all be standardized to the same basis, preferably mature equivalent, two-time milking, 305-day lactations.

A study by the authors at the West Virginia Agricultural Experiment Station, using 5,177 Ayrshire cows, showed that within herds there was an average increase of 13 lbs. fat for each increase of one grade of type. For example, if in a certain herd the average of the animals classified Good Plus had production records averaging 380 lbs. fat, it would be expected that, on the average, the animals classified Very Good in this same herd would have records averaging about 393 lbs. fat. It must be remembered that these are average figures and that there are a great many variations within and between groups.

It has been found that the relationship betwen the type rating of a cow and (1) her first butterfat record; (2) the butterfat record begun nearest to the date of classification; and (3) the average of all her butterfat records was low. However, it should be pointed out that these relationships improve as more records and more classifications are averaged.

This last point is important because we know from experience and from research that the average of several butterfat records of a cow are a better guide to her true *(Turn to page 76)*



One of the few Ayrshires that classified Excellent regardless of stage of lactation or age. Top, 8 years, in full bloom; second, 10 years, with collapsed udder and dry; bottom, 12 years. Classified Excellent 8 times in succession.

These pictures show improvement some cows make with age. In the top picture, this cow was 4 years old and was classified Good Plus, well advanced in lactation. Lower, at 6, she classified Excellent shortly after freshening.

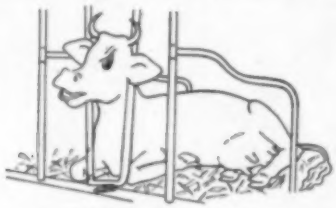
Shown at top, this cow classified a high Very Good at 8 years. Below, at 9, dropped to a Good Plus rating due to her udder breaking away. Another reason why animals should be reclassified rather than stand on highest rating.

FARM FLASHES

WATER NEEDED FOR MILK

One of the most important factors in maintaining high milk production is an adequate supply of water for the dairy herd. For that reason, dairy cows should have access to plenty of fresh water at all times.

While on pasture, cows get some of their water from the grass. However, when on dry feed and hay very little, if any, water is provided, so more drinking water should be made available than during the pasture season.



"No Water — No Milk!"

With an average ration, about 10 pounds of water is required for each pound of dry matter consumed. If less than this is provided, the cow will gradually consume less feed in order to keep her water and feed supply in balance. The net result, of course, is a decrease in milk production.

Cows like to eat some of their feed, then drink some water; and eat more feed, followed by more water. If they are limited to drinking water once or twice a day, they will not consume enough feed to keep up high production.

AMMONIA FUMES CAUSE LESIONS

One of the leading causes of eye lesions in chickens are ammonia fumes, so prevalent in poultry houses during the winter months.

One experiment at the University of New Hampshire resulted in eight out of eight nine-week-old chickens contacting eye lesions when exposed to ammonia fumes. In another experiment, with four-week-old chicks, 18 out of 20 developed the condition. Eye lesions have been very prevalent in many chicken flocks during other winters, and a recurrence should be prevented this winter if possible.

Preventive measures include less crowding of birds in pens, as low a brooder and house temperature as possible, and a good ventilation system to remove those fumes that are produced. Houses with old litter may present more of a problem than those with new litter.

NEWLY OPENED SILO DANGEROUS

Even though it has been said many times, it would be well once again to remind dairymen that a newly opened silo can be dangerous. Silage ferments and forms carbon dioxide, which is heavier than air, so it settles to the bottom of the silo. It displaces the oxygen, and if sufficient oxygen is not present a person will smother.

The only sure way of knowing whether or not a newly opened silo is safe is to perform a simple test. This can be done by lowering a flame, such as a candle or lantern, into the silo before entering. If the flame goes out, there is not enough oxygen inside to support life and you might suffocate. If the flame continues to burn, it means it is safe to enter for oxygen is present.

When sufficient oxygen is not present, you might stir the air by tying a jacket or blanket on a rope and swinging it around in the silo. However, be sure to stay outside. Then recheck the silo before you enter to make sure this procedure introduced enough oxygen into the silo.

WELL PRESERVED MANURE VALUABLE

A ton of well preserved, mixed manure contains plant food equal to 10 lbs. nitrogen, 5 lbs. phosphoric acid, and 10 lbs. potash. An Iowa agronomist says the average farm in that state produces $570 worth of manure each year. Much of it, however, is not put on the fields while it has its full value.

In the first place, it is very important to use enough bedding to absorb manure liquids in barns and sheds. Hauling manure directly from the barn and spreading it on fields where it is needed eliminates some of the loss from leaching and vaporizing which occurs when manure is piled out in the open in barnyards and feeding lots.

You do stand to lose some of the manure's value if it is spread on top of snow on rolling land.

When it is impossible to haul manure out regularly, it may be kept under a roof and on a water-tight floor. Cattle sheds, where it is kept well compacted, make ideal storage places if hauling cannot be done until spring.

SEE AYRSHIRE CLASS, PAGE 81

Now that the 21st Annual Hoard's Dairyman Cow Judging Contest is in full swing, we hope all of you will turn to page 81 and place the Ayrshire class. There will be three more classes to follow, and when all have appeared fill out one of the official entry blanks and send in your entry to: Contest Department, Hoard's Dairyman, Fort Atkinson, Wisconsin.

BROODING WITH ELECTRIC FLOOR HEAT

New Jersey engineers report very satisfactory results when electric heat is used for radiant floor brooding.

Soil heating cable is placed in the top course of floor concrete in a section corresponding to the brooding area. A thermostat set in the concrete controls the floor temperature. An insulated hover placed over the entire area keeps the heat in and provides a comfortable enclosure for the chicks.

The flat hover top can be boxed to hold litter material such as peat moss, chopped straw, or corn cobs, and then fitted with cross slats forming an ideal roosting surface for older birds.

As only part of the floor is heated, the rest of the pen is a cold room brooding area. This favors more rapid feathering and is likely to produce a more vigorous, healthier bird than is the case when the whole room is kept warm.

It is reported that the cost of operating this system compares well with that of other brooding practices and since there is no equipment above the floor that can't be removed, the rooms are easily converted to laying houses for use in summer and fall.

GUARD AGAINST SWINE ENTERITIS

One of the most costly of all swine diseases is swine enteritis which covers a dozen different infections and disorders. Enteric diseases not only cause heavy death losses, but often leave pigs in such a condition that they may never gain properly.

Here are suggestions for preventing losses:

1. Isolate newly purchased swine from the home herd for at least three weeks.
2. Control internal and external parasites which weaken the animals' resistance.
3. Keep swine away from old hog lots, contaminated pastures, cow pastures, stagnant pools, and other sources of infection.
4. Keep feeding and watering equipment clean.
5. Check rations carefully and prevent overeating of rich concentrates.
6. Watch for scouring, loss of weight, and failure to convert feed into gains. At the first sign of trouble, get a diagnosis and isolate the ailing animals from apparently healthy ones.

CHANGE FEDERAL MEAT GRADES

The federal meat grades have been revised resulting in the addition of a new grade and renaming two of the old ones.

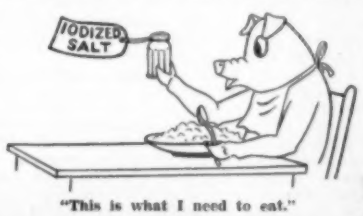
The new grade will be called "Good" and will include beef from the young animals that are now part of the "Commercial" grade. This latter grade formerly contained the older, mature animals as well as the younger animals with a more tender grade of meat. Cuts in the new "Good" grade will be smaller in size and more tender than those of the commercial grade which now includes only the older animals.

Other changes include combining both Prime and Choice in one grade called Prime, renaming the present Good grade as Choice, and leaving only the older cattle for the grade of Commercial. Standards for the Utility, Cutter, and Canner grades will remain the same.

BROOD SOWS NEED IODINE

It is important that brood sows get iodine in their rations or they are apt to farrow dead pigs or pigs that die soon after birth.

There have been actual cases where farmers have lost several litters of pigs, and when it was determined that the losses were due to iodine deficiency, the remainder of the pregnant sows were supplied with iodine and the losses checked.



"This is what I need to eat."

The simplest way to supply iodine to your sows' ration is to add stabilized iodized salt which you can get from your feed dealer. It costs a little more than ordinary salt but gives protection against iodine deficiency. Feed one-half pound of salt with every 100 lbs. of grain mixture in addition to free access to iodized salt.

Seed Fertilizer

Determine your seed and fertilizer needs now.
You will help both yourself and the producer.

the 1951 supply story

by Henry Lunz

A FEW weeks ago a "state of emergency" was declared in the United States. With that we can automatically assume that things will tighten up—prices will be controlled, labor will be short, and the things we need will be harder to get.

To farmers first things come first, and one of the first concerns is whether the feed, seed, and fertilizer necessary to jack up farm production and keep it at wartime levels can be had.

The first big consideration to each of us as an individual is "how much will I need for my own farm?" Perhaps we're turning more and more to grassland farming. That means we'll need more grass and hay seed, and less grain. It may also mean that we'll produce less grain, which might result in shortages. The government has been encouraging us to put more land to grass and hay. Now the plea may turn again to a call for more grain. We'll have to take that into consideration.

The next question to be answered is "how much will be available?" In general, the seed supplies for the coming spring are much better than they were last year. There are a few "sore spots," but the over-all situation looks good. Lumping all farm seed into one total, the 1950 production was over 50 per cent larger than that of 1949. This doesn't necessarily mean that all the seed we need will be easy to get, but it looks better than it would have if production had dropped this year. Here's the way the supply stacks up for dairy farmers:

ALFALFA . . .

The total supply of all types of alfalfa seed is high, but we have to break it down into varieties before we can draw any conclusions. The supply of hardy or northern grown seed seems to be at least 25 per cent less than last year—and that was barely sufficient to meet the needs. It is probable that dairy farmers in the northern states where hardy strains are necessary will have trouble getting all they need.

We may be able to import some seed from Canada to make up for the loss of hardy strains caused by too much rain and snow and bad harvesting conditions. But, again, it doesn't seem probable that that will completely relieve the shortage.

Semi-hardy strains have often given good results in many states where extreme winter hardiness is not essential, but Nebraska and Kansas produced short crops of them this year, too.

In contrast to the shortage of hardy strains, the southern states produced a record amount of seed last summer. There the need for hardiness is not a factor as in the northern states, and the southern dairyman will be able to obtain all the seed he wants at a reasonable price. This doesn't help the northern farmer as it is unwise for him to use southern grown common seed under any conditions.

PLAY SAFE WHEN YOU BUY . . .

If you want to play safe when you buy seed, don't accept it as northern grown unless it is State Certified, U. S. Verified, or Canadian grown. You can easily identify "certified" seed by reading the tag on the sack. It will be an official tag with the seal of the certifying agency of the state performing the service and will name the variety and state where the seed was grown.

Under supervision, foundation stocks of certain varieties of alfalfa seed such as Ranger, Buffalo, and Atlantic have been sent to the Southwest for increase. The result of such increase is certified under joint agreement of the states concerned. This increase appears to retain its hardiness, wilt resistance, and other characteristics. It would therefore be wise to consider the use of certified seed of desired varieties grown in the Southwest from approved foundation stocks. Somewhat more than the usual percentage of the alfalfa seed production has been certified for this season's use.

United States Verified identifies as to origin or state where grown and no statement is made as to variety or seed quality. Canadian grown seed must be stained before entering this country. One per cent of a lot of alfalfa seed grown in Canada must be stained a violet color before it is allowed to enter the United States. Every purchaser of alfalfa seed should be suspicious of any seed offered for sale which is not properly labeled as to origin with a properly applied blue certification tag, a red and white verification tag, or is stained to indicate its Canadian origin. If suitable alfalfa seed is not available, the substitution of red clover may well be considered.

SWEET CLOVER . . .

Supplies are above average. Some seed dealers report an increased demand for sweet clover while others report a steady demand. The annual type (Hubam) is used to a considerable extent in the South and the biennial type in the North. If cotton acreages are increased further in the South, sweet clover may be expected to decrease. It has decreased already in certain northern areas and farmers are critical when they find it in their meadows or grain fields.

RED CLOVER . . .

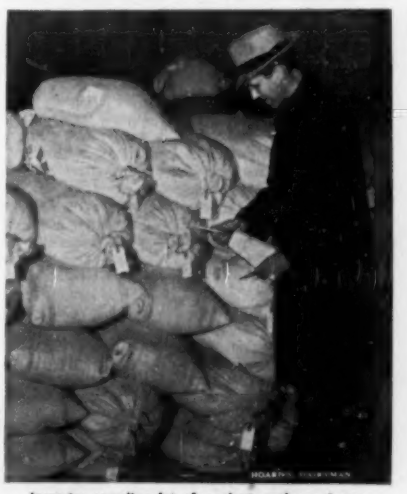
A record-breaking crop of red clover was produced this year and even considering the small carry-over, there is about 50 per cent more seed available than last year. Red clover is second only to alfalfa as a popular protein hay and has long been the choice of dairy farmers.

ALSIKE CLOVER . . .

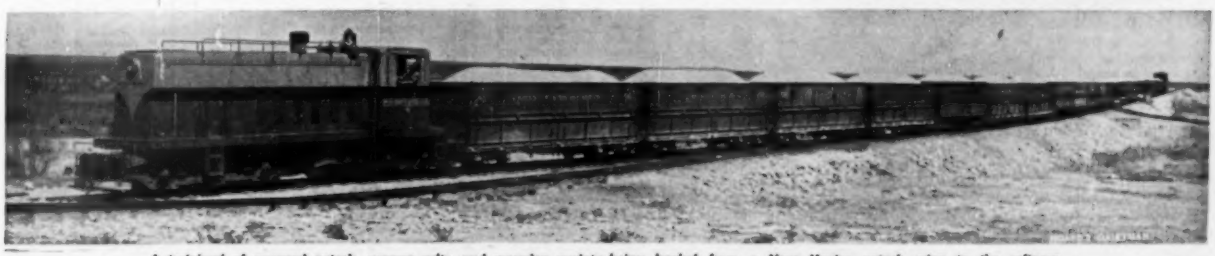
Available supplies are below normal. But alsike is not generally used as much as formerly, so there may be no serious shortage. If you need alsike, remember that it is a small seed and will go several times farther than either alfalfa or red clover in seeding acreage.

LADINO CLOVER . . .

A record crop was produced this year and a large supply of seed is available. The production in California and Oregon appears to be equal to the nation's normal *(Turn to page 69)*



Inspector sampling lot of seed at seed warehouse.



A trainload of screened potash, manure salts, and granular muriate being hauled from a New Mexico potash mine to the refinery.

The author is the agronomist in charge of seed and weed control for the state of Wisconsin.

Water Systems for the Dairy Farm

by R. L. Madden

MILK is 87% water and the body of the cow is over 50% water. In addition, the body wastes are approximately 85 to 90% water. It is little wonder then that we consider water vital to proper feeding of the milking dairy cow.

The individual drinking cup is the most convenient for the stanchion barn operator. Once installed the drinking cup requires little maintenance and the labor involved in watering the dairy herd has been reduced to zero. In the stanchion type barns that are filled with dairy cows there is little danger of drinking cups or water lines freezing, even in the northern states. The dairy herds produce enough heat to keep the barn temperature above freezing.

A single drinking cup can supply water for a herd of up to 40 head if the cows are allowed to drink at will. In a pen or lounging type dairy barn, the single drinking cup, protected from freezing, can supply the drinking water needed. One or two drinking cups located in the barnyard can be used to replace the watering tank. Two drinking cups, protected from freezing will serve a herd of 20 cows when watered twice a day. Drinking cups draw water for relatively short intervals of time and at a low rate of flow. For this reason drinking cups do not reduce the overall pressure of a water system for long intervals of time. Drinking cups and pressure water systems do not store large quantities of water for any length of time so that the temperature of water from a drinking cup will be fairly constant the year around.

Watering Tanks Can Be Weatherproof

Watering tanks of one kind or another have been used for many years. Water tanks serve well for outside watering during the warm months of the year, but present ice problems if the livestock are watered outside during the winter months. The water supply to an outside watering tank can be made automatic by using a float-type valve on a pressure water system. If the well and pump are located close to the watering tank and used only for supplying water to the tank, a float-type switch can be used to control the pump.

There are many types of stock tank water heaters on the market today that will keep stock tanks open for drinking. Most of these stock tank heaters are of the electrical type. Non-electrical tank heaters are on the market, but generally are more expensive to operate, due to lack of an automatic device to turn them off when the water reaches a predetermined temperature. Several factors that influence the use of a stock tank heater should be kept in mind. Water freezes from the surface down. Water two or three inches below the surface is several degrees warmer than the surface water. If the sides of the tank are insulated, only two or three inches need to be heated to prevent the formation of ice. Water in large tanks with large exposed drinking surface area will cool off much faster than small tanks with small exposed surface areas. A small tank with a float-type valve to draw only small quantities of water at a time will require less heating to keep free of ice.

Heat Tape Will Protect Exposed Pipes

Exposed pipes that carry the water to the watering tank or drinking cup often freeze and cause the watering system to fail. Thermoplastic heat tape or soil heating cable wrapped around the pipe will prevent freezing. Either the thermoplastic tape or the soil heating cable can be controlled automatically by using a thermostat. The thermostat can be held against the pipe with friction tape. The thermostat will give better control of the heating unit if it is taped against the pipe rather than hanging free in the air. The thermostat is usually set to turn the heating unit on or off at 35° to 40°. Both the thermoplastic tape and the soil heating cable are low wattage units, making them inexpensive to operate.

The heat lamp can also be used as a de-icer for either water pipes or small watering tanks. The radiant heat waves from the lamp will heat the objects they hit, even though the surrounding area may be quite cold. The 250 watt heat lamp is usually hung 18 to 24 inches above the pipes to be heated. If the heat lamp is used as a de-icer over a small water tank, care must be taken to protect lamp and cord from livestock damage.

A frost proof hydrant located at the watering tank or in the loafing shed will provide water the year around. The frost proof hydrant is constructed so that the water flow is shut off below the frost line. Water remaining in the riser pipe when the valve is closed flows down an outside jacket to a sand or rock bed laid below frost line at the time the hydrant is connected to the water line. No water remains in the riser pipe above frost line. The hydrant is manually operated, and is constructed to give long service.

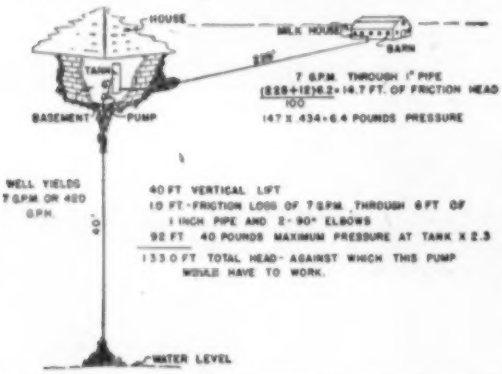
The method used to supply the dairy herd with water may vary with the personal desire of the farm operator. The laws governing water flow and water pressures are constant, and should be followed in planning a water system. Time spent in planning and providing for a complete farm water system will save many headaches as the system is expanded to serve all farm uses.

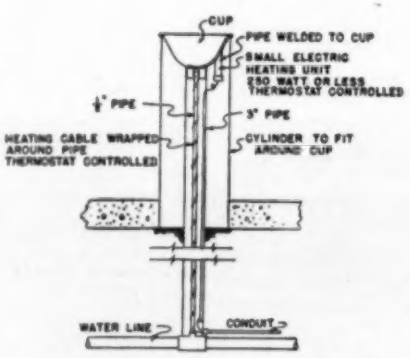
The heart of any water system is the pump. The choice of the right pump to fit the farm well and water system is essential. The selection of a pump will depend upon the depth of water, depth of well, water yield, and location of pump in respect to well. There are two distinct types of water systems, known as shallow well and deep well systems. Shallow well pumps depend entirely on a vacuum or suction at the pump and will lift water only about 20 feet. Deep well pumps use some means of actually lifting the water from the well, such as a piston or jet set at or near the water level. Pumps for the two types may be similar in construction but the pumping mechanism of deep well pumps must be placed down in the well.

The more common type of pumps generally found on the farm are the shallow well centrifugal pump, shallow well reciprocating or piston pump, shallow well jet pump, shallow well turbine, shallow well rotary or gear pump, deep well piston pump, and deep well jet or ejector type. Deep well turbine and deep well helical rotor pumps are not generally used for farm water supply installations. Pumps are listed according to capacity and pressure limitation in relation to well diameter and depth. Follow manufacturer's recommendations when selecting a pump. Where sufficient water is available the pump selected should be large enough to take care of peak demand loads without drawing on the pressure tank, and should be large enough to pump the entire day's water supply in one to two hours. Wells yielding 500 to 600 gallons per hour (G.P.H.) are desirable for the dairy farm.

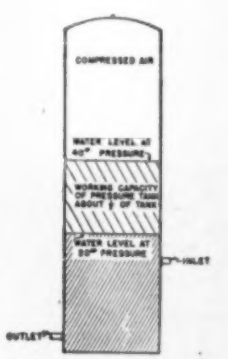
How Much Water Will You Use?

The amount of water used on a farm will always increase when a pressure system is installed. Table I shows the average water requirements for the farm and home using a pres-


HOUSE
MILK HOUSE
BARN
TANK
BASEMENT
PUMP
7 G.P.M. THROUGH 1" PIPE
((25+12)÷2 = 14.7 FT. OF FRICTION HEAD
100
147 X .434 = 6.4 POUNDS PRESSURE
WELL YIELDS 7 G.P.M. OR 420 G.P.H.
40 FT VERTICAL LIFT
10 FT.-FRICTION LOSS OF 7 G.P.M. THROUGH 6 FT OF 1 INCH PIPE AND 2-90° ELBOWS
92 FT. 40 POUNDS MAXIMUM PRESSURE AT TANK X 2.3
133.0 FT. TOTAL HEAD AGAINST WHICH THIS PUMP WOULD HAVE TO WORK.
WATER LEVEL
Showing lift of pump, and how to figure pressure and head in a water system.



Frost proof drinking cup for pen barn or outside use.



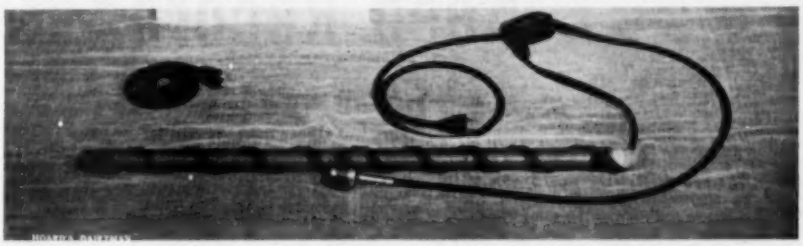
Cross-section of pressure tank.

Practical information on how to plan and install a water system that will meet your requirements and provide dependable, reliable service over a long number of years.

In stanchion barns individual drinking cups for every two cows is the most common method of supplying water.

Watering unit with frost proof hydrant and de-icer as a year round water supply. De-icer is grounded to hydrant.

Four types of stock tank de-icers. Water surface area should be held to minimum to cut cost of operating heating unit.



Illustrating use of thermoplastic heat tape in protecting water pipes. Thermostat taped to pipe gives automatic control.

sure water system. Shown in Table II are average flow requirements by various fixtures.

TABLE I

	Gals. per day
Each member of family	40
Cow (milking) each	35
Cow (dry) each	12
Steer	12
Hog	5
Sheep	3
100 chickens	4
100 turkeys	10
Work horse	10

TABLE II

	Gals. per minute
Faucet (laundry, kitchen, lavatory, milk house)	3
Shower	4 to 6
Bathtub	4 to 8
Water closet	4 to 5
½" hose and nozzle	3 to 4
¾" hose and nozzle	5
Lawn sprinkler	2
Watering cup	1 to 2

The 42-gallon pressure tank is usually satisfactory for most farm installations. Where a large number of dairy drinking cups are used, an 82 or 120-gallon tank will result in fewer starts and stops for the pump. If only a limited supply of water is available, a 220 or 315-gallon tank should be used. The 315 or 550-gallon tank is most suited for use with a gasoline engine, as the large tank reduces the number of startings required.

The pressure tank contains air and water. As water is pumped into a pressure tank, the air is compressed above the water. The compressed air forces water through the pipes to the various taps. When the pressure switch cuts off the pump at maximum pressure pump setting, the tank contains two-thirds water and one-third compressed air. The working capacity of a tank or the amount of water that can be drawn off before the minimum setting of the pressure switch will start the pump again is approximately one-fifth of total capacity. Eight gallons of water can be drawn off between the water levels at 40 lbs. pressure and 20 lbs. pressure in a 42 gallon tank.

How to Figure Head and Pressure

The gravity water system depends upon the height of the water storage to force the water to the taps. Height of water in feet, times .434 gives the pressure in pounds. Water stored at an elevation of 20 feet would have a pressure of 8.68 pounds. Tap pressure would be 8.38 pounds, minus friction loss in the pipe. The storage tank for a gravity system should be large enough to hold at least two days' supply of water.

A pump has to work against two types of forces in raising water from the well level into the pressure tank or to the storage elevation. Where a pressure tank is used, the vertical lift from water level to pressure tank, plus the pressure in the tank, is called vertical head. The resistance to flow of water in the piping is called the friction head. Total head is vertical head plus friction head. The total head is a figure that should be known in selecting a pump, as pumps are rated in gallons per minute or gallons per hour against the feet of head which the pump has to work, so it is necessary to work with both pounds pressure and feet of head in planning a water system. Multiplying pounds pressure by 2.3 gives the equivalent feet of head. Multiplying feet of head by .434 gives the equivalent pounds of pressure.

Using Table III we find that under column for one inch pipe for a flow rate of 7 G.P.M. the loss of head is 6.2 for each hundred feet.

$$\frac{225 \text{ ft.} + 12 \text{ ft. (2-90° elbows)}}{100} \times 6.2 = 14.7$$

feet of friction head.

14.7 ft. x .434 = 64 pounds of pressure lost between pressure tank and barn. Pipes used to carry water to the barn and other main buildings should be large enough so that not more than five pounds pressure loss will result. Our loss in this example is too great. Using 1¼" pipe for the first one hundred feet and 1" pipe for the remaining 125 feet will give a pressure loss of 4.8 pounds, which is satisfactory.

TABLE III

Friction of water in pipes. Loss of head in feet due to friction per 100 feet of ordinary pipe.

Gallons per Min.	½" Pipe	¾" Pipe	1" Pipe	1¼" Pipe	1½" Pipe	2" Pipe	2½" Pipe
1	2.1						
2	7.4	1.9					
3	15.8	4.1	1.3				
4	27.0	7.0	2.1	0.6	0.3		
5	41.0	10.5	3.3	0.8	0.4		
6		14.7	4.6	1.2	0.6	0.2	
7		19.6	6.2	1.6	0.7	0.3	
8		25.0	7.8	2.0	1.0	0.3	0.1
9		30.8	9.7	2.5	1.2	0.4	0.1
10		38.0	11.7	3.1	1.5	0.5	0.2
15			24.1	6.5	3.0	1.1	0.4
20			42.0	11.1	5.2	1.8	0.6
25				16.6	7.8	2.7	0.9
30				23.5	11.0	3.8	1.3

Friction of water in 90° elbows is equivalent to 6' of straight pipe. Add 6' to length of pipe for each 90° elbow used.

The pump and pressure tank should be located as near the well as practical. In many cases a pumping pit has been used, but sanitation problems increase with the use of a pit. Health regulations governing the sale of milk should be investigated before a pumping system is installed on any farm where fresh milk is sold. Pipe lines should be laid as straight as possible. It is easy to place a T coupling in a line at the time it is laid to take care of future branch lines. Recording the location of main lines, branch lines, valves and T couplings in relation to a permanent object may save a lot of digging.

Water requirements for the milkhouse are increasing. In many areas a hot water tank is required in the milkhouse to sell Grade A milk. Likewise water is required in the milkhouse for washing the milking equipment. Also the milking equipment must be washed in the milkhouse so that a cold water faucet is necessary, as well as the hot water outlet. The amount of water used for cooling milk depends upon the method of cooling, and the type of cooler used. The milkhouse water supply should be included when planning a water system for the dairy herd.

Wire on a Separate Circuit

The water system should be wired on a separate circuit, coming directly from main entrance box. It is very important that a good wiring job be done when making a pump installation. It is quite often damp around a pump installation and all possible care should be taken to prevent dangers of shock. If a pump is to give fire protection, it should be connected ahead of the main disconnect switch, and properly fused.

A water system with pipes running to the farm buildings makes a good grounding system if there are no breaks in the system. A flexible coupling such as a rubber hose breaks the ground, and should be jumpered by a number six wire securely clamped to the pipe on each side of the break. In a gravity system the riser pipe into the tank should be jumpered to the pipe carrying the water out of the tank. All stock tank de-icers should be grounded. If there is no provision made for grounding the de-icer itself, ground the water tank.

A well-planned and well-installed water system is a labor saver, a convenience, and a production tool for the farm operator. **THE END**

Don't Guess . . . Keep Records

by L. H. Brown

Keep your farm business in black and white . . . it will help you keep it out of the red.

THIS may sound like an old line that we farm management folks have been dishing out for the past several decades—we who are supposed to just dote on keeping accounts. Well, if it will help to dispel any such notions, let me hasten to say that I don't particularly like to keep records either.

I feel like the farmer who told me the other day that any records he keeps are kept not for the fun of it but to tell him something he needs to know. He said that he didn't like to keep records but neither did he like to go groping around in the dark if a little effort in record keeping would help light the way.

There is a way to get around this business of keeping records yourself—get the good wife to do it. Or, better still, turn the job over to the son or daughter who may be partners with you or with someone else some day. There is no better way of getting them ready to face the job of taking over the business than by letting them get an insight into it by keeping the books. Too, the discipline of keeping a good set of books is not far from tops as a character builder.

Son Writes the Checks

A friend of mine carries that a step further. He has his teen-age son make bank deposits and write checks. Of course, the father signs the checks but the son is in position to know what happens to the old bank balance come payday. Too many farm boys have to wait until they are in business for themselves to find this out. But here—let's get back on the beam of our story. What are some of the questions of tomorrow that can be solved from the stuff that is written into the record today? Let's look at a few "for instances."

Take an obvious one first—income tax—remember the old fog that gathered over the dining room table 'til the wee small hours this year just before that year end dead line? Did you ever stop to figure that every time you forget $100 of expense, it costs you about a half a ton of fertilizer that you probably could stand on your pasture, wheat, or corn? Did you ever hear of tax planning? Any farmer knows that his income is likely to vary several hundred dollars from year to year in spite of anything he can do. It is often possible to save several dollars by shifting some deductible expenses from one side of January 1 to the other to help even out the taxable farm income. There isn't anything wrong with it—it's just good business.

To be able to do it, you need records that can partially be summarized along about the 1st of December to see just how things are stacking up. Any smart operating small business man like your grocer, hardware man, or clothing store operator does tax planning and the same opportunity is available to the farmer if he is fortified with a good set of records.

Records Aid Partnerships

Suppose we take another entirely different kind of a problem. My work brings me in contact with a lot of farmers and farm boys who want to work out some kind of a partnership. I've talked with dozens of them with various kinds of problems but the problem that always comes up when they are starting out is what is a fair division on income and expenses and how should this division be altered as the son is able to acquire more ownership in the business and take more responsibility. There is no better tool to use for solving this prolbem than well kept and properly summarized farm account books.

Oftentimes partners want to know if their business is large enough to support two families. Here, again, the old farm account book would have answered the question before it came up. My fifteen years of experience of working with family partnerships lead me to believe that more partnerships "go on the rocks" because of lack of sufficient volume of business than for any other cause.

Records kept on a sample of farms in southern Michigan show that where machinery expense made up about 14% of total expenses during the latter part of the thirties, it now makes up almost a quarter and it hasn't stopped increasing. As a matter of fact, a lot of farmers are wondering how far they can afford to go toward mechanization. This is another place where certain kinds of farm records will help give the answer. Speaking from the kind of farms we have in southern and central Michigan, it looks as though the machinery expense will not get out of line on medium (140 to 200 tillable acres) to large sized farms (200 to 350 tillable acres) as long as the machinery investment does not exceed $35 to $45 per tillable acre.

The kinds of records we have mentioned so far are the usual simple farm accounts that have been developed by agricultural colleges all over the country. Each state has a little different type of a book designed to fit the conditions faced by farmers in that state. Here in Michigan we distribute some 18,000 to 20,000 of these books a year. Several industrial concerns which do business with farmers have developed very good books and given them to farmers as compliments of the company.

About the minimum essentials for an account book for the usual general farm business is a cash record where receipts and expenses can be classified under fifteen or twenty headings, a place for recording the inventory of buildings, machinery, livestock, and feed on hand and certain essential production records like crops grown, milk production, egg production, and so forth. It takes less than five minutes a day to do the bookkeeping on a farm and a few hours at the end of the year to summarize it. Such a record will store the information from the year's business in such a form that is always readily available for use in planning future operations.

Compare Your Records With Others

In most midwestern states, the agricultural colleges get out reports annually which contain information that can be used by farmers to compare their year's performance with other farmers who are operating under similar conditions. By making these comparisons, farmers are able to set up goals for standards of performance which will make for a profitable business.

In several states, farmers in cooperation with the extension service have organized farm accounting associations and the association hires a trained farm management specialist to help them keep and analyze their farm account records. This service may cost from $20 to $50 a year. The farmers with whom I have talked feel that the value of such services is much greater than the cost.

Probably the most highly developed cooperative record keeping service is the local dairy herd improvement associations. For the farmer who is in the dairy business as a major enterprise, there is no more valuable information that he can have at his disposal than that from his herd book.

DHIA records are a must if one is to carry on an intelligent breeding and selection program. This type of information, whether it is obtained through the association or whether the farmer keeps his own records, is highly essential to the efficient operation of the dairy enterprise. To get the information it is only necessary to weigh and test the milk and weigh the feed periodically for each cow, thus making the estimates of feed fed and production.

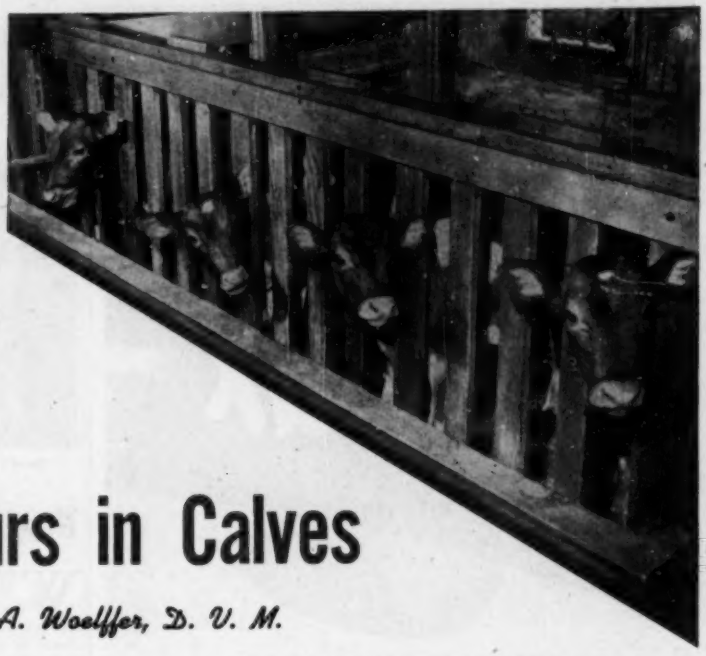
We should suggest that comparable records can be kept for any major enterprize in the farm business. The information to be obtained depends on the question one wishes to answer.

On any meat producing enterprise, such information as pounds of feed per pound of gain is one of the gest guides to efficiency. This information along with data on margins between cost and selling price is a must for most cattle and lamb feeders. All it takes is a little care in estimating the amount of feed that goes into the enterprise and the purchase and selling weights and prices. If the data is recorded in some kind of a record book, it is always available for future reference. Several years of such data is invaluable for planning feeding operations.

Wide Variation in Feed Required

It is not uncommon to find as much as 50% variation in feed required per pound of gain between different farms and sometimes different lots of livestock on the same farm. Some farmers are able to make a pound of pork with as little as 3.5 pounds of feed, while others take as much as 6.5 pounds. On a study that was made last year of feeding efficiency on ninety Michigan farms, it was found that the returns per dollar of feed fed vary from $.88 to $3.56 with essentially the same types of livestock.

One could go on indefinitely giving examples of how carefully kept records are essential to profitable management in modern farming. For most farmers, record keeping is a laborious task. At the same time, it is an excellent device for acquainting the members of the family with the business of farming and making them fit to become good farmers themselves. Simplicity is the watchword in setting up farm records. Keep only the records that you need to analyze your business; summarize them at the end of each year, and I am sure you will agree that well-kept records are essential to profitable, modern day farming. **THE END.**



One out of every five calves will be lost before two years of age. Here's how to stop heaviest losses from scours.

Preventing Scours in Calves

by E. A. Woelffer, D. V. M.

WE ARE told that 22 out of every 100 calves die before two years of age. A little over half of these will die before they are one year old. This information on calf mortality came to us several years ago from the U.S.D.A. Bureau of Animal Industry. Although accurate information on the causes of calf losses is not available, we have known for a long time that diarrhea or calf scours, as it is commonly called, remains one of the chief calf raising problems of the dairyman.

Calf scours is most prevalent during the winter months, but individual cases and outbreaks may occur at any time of the year. Often the condition is confined to one or several animals in a group. At other times, the scouring spreads to all or nearly all the calves in the same or adjacent pens.

Diarrhea in calves may range from a mild intestinal upset involving one or several animals, to a complicated and sometimes perplexing outbreak that may include all or nearly all the calves on the farm. When such severe outbreaks occur, many of the calves become sick, some may die, and a few never seem to fully recover. Several factors are usually involved and these account for the variations in the disease. If the disease-producing agents are weak or few in number and the calf's resistance is high, the calf is relatively safe. If the reverse is true, scouring and other symptoms invariably develop.

This future herd sire was dropped "under the stars" in an individual paddock. He's getting the right start in life.

It may be well to point out at this time that scouring in itself is not a disease. It is a symptom of disease or evidence of an abnormal condition affecting portions of the digestive system. Perhaps the best known but least understood form of scouring is the disease called calf septicemia, but most widely known as white scours. The condition is seen mostly in weak and young calves under a week old; however, once the infection gains momentum, it may affect older calves as well.

How to Recognize White Scours

White scours produce a variety of symptoms. In the most acute form, the calf shows weakness, appears sleepy, and soon dies. Usually the calf has a severe diarrhea, the fecal material often being whitish in color and full of bubbles. The pale color is due to the lack of bile. The calf may die after a few days or it may recover.

Organisms (germs) usually associated with the condition are of the colon bacillus type and there is evidence that these organisms are largely responsible for white scours. However, it is a fact that these bacteria also live in the lower intestine of healthy calves. When conditions are favorable for bacterial growth, colon bacilli multiply rapidly and soon overcome the calf's defensive forces. When the calf is healthy, however, and nothing interferes with its growth and development, the organisms are kept at bay and are relatively harmless. This indicates that there are other agents (predisposing causes) that pave the way for the colon bacilli to engage in their destructive work.

Colon Bacteria Attack Like an Army

Like an attack in modern warfare, the colon bacilli are similar to the activities of the ground forces who enter and do the mopping-up job after the enemy has first been softened up by air bombing and artillery fire. In this case, the calf serves as the enemy and the predisposing causes are represented by the air attack and artillery fire. The most common primary causes of scouring are weakness at birth, exposure to filth, flies, and unfavorable weather; also heavy parasitic infestation, fatigue, and failure to obtain the first milk (colostrum) from their dams. These conditions encourage the development of other types of bacteria, toxins, and virus infections. Undoubtedly there are other agents, some perhaps not yet isolated. Anyone or a combination of these agents lowers the calf's resistance to the point where the colon bacilli take over and white scours ensues. Other diseases that often develop as primary or secondary to white scours are colds, otitis, navel ill, pneumonia, and a number of other specific and non-specific infections.

Vibrionic Enteritis

A highly infectious disease that causes scouring in calves is vibrionic Enteritis. The disease is usually chronic, although acute catarrhal inflammations may develop in the anterior part of the small intestine. The seasonal occurrence is chiefly from December to March and is most widely prevalent in the northeastern part of the United States. Cattle are affected as frequently as calves. In severe attacks, the onset is sudden, appetite cease, milk production drops, and the animals are generally depressed. The feces are usually watery and often blood-streaked.

Intestinal Parasites

The appearance of blood in the feces often confuses the above disease with coccidiosis, or red dysentery. Coccidiosis also causes diarrhea in cows as well as in calves. Destruction of epithelial cells in the intestines is brought about by the development of the parasite, coccidia. The coccidia destroy the tiny blood vessels in the walls of the intestines permitting free blood to pass out with the thin watery feces. Heavy infestations of other parasites such as tapeworms, occasionally cause scouring and other severe symptoms. The infestation may be confined to individuals, or all the calves in one pen or barn may be so filled with parasites that they become listless, pot-bellied, and generally unthrifty.

Scouring From Other Causes

Common causes of scouring, particularly in older calves, are overeating, radical changes in diets or feed ingredients, or the eating of foreign material such as bedding, binder twine, etc. The latter condition is seen mostly in calves that have a ravenous appetite. In addition to eating the regular feed, they have a common habit of chewing and swallowing almost anything they can get into their mouths, often preferring filthy bedding or other material to the hay in the manger. Such individuals often serve as sources of infection to other calves.

Prevention is Most Important

The dairyman's chief interest in dealing with scours is to prevent its occurrence. If it occurs, prompt action and good judgment may save a calf's life or prevent widespread infection. Happily, the means of preventing diarrhea in calves is pretty much the same regardless of age, breed, or kinds of organisms involved.

Experience has repeatedly demonstrated that prevention is more effec- *(Turn to page 88)*

CHLORINE BACTERICIDES

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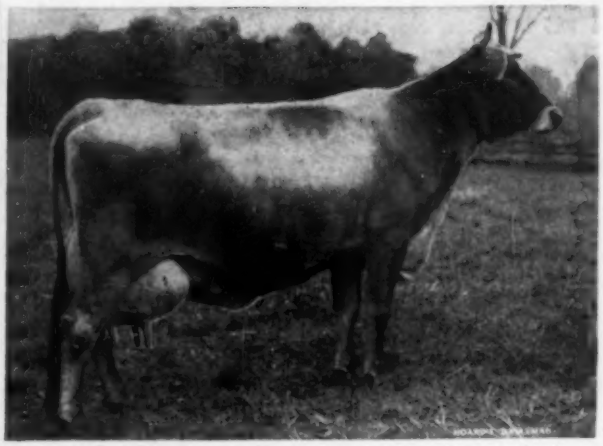

Royal's Aster of Lee's Hill, new butterfat champion of the Brown Swiss breed.

New Brown Swiss Butterfat Champion

WITHIN the past year four Brown Swiss cows have produced more than 1,200 lbs. fat, the most recent being Royal's Aster of Lee's Hill, bred and owned by Lee's Hill Farm, New Jersey, that finished an all-time high record for the breed, regardless of the times milked daily. Her record is 1,241.18 lbs. fat, 29,431.6 lbs. milk in 365 days, 3x, at seven years, one month. "Aster" is the third daughter of Jane's Royal of Vernon to break the 1,200-pound mark, and she now has surpassed the 1,228-pound record made by her stablemate, Royal's Rapture of Lee's Hill, that was butterfat champion for a little more than one year.

Until the record by "Rapture" was completed, Illini Nellie held the butterfat record since 1937 with 1,200 lbs. fat in one year on 3x milking.

Royal's Aster of Lee's Hill has been a consistent producer throughout her lifetime, as will be noted by the following records:

Age	Class	Days	Pounds Milk	% Test	Pounds Fat
2-4	2x	365	14,578.6	4.14	603.84
3-9	3x	365	17,727.7	4.33	768.14
4-11	3x	305	17,797.8	4.38	779.65
5-10	2x	355	14,081.6	4.49	632.91
7-1	3x	365	29,431.6	4.22	1241.18

With her production of 29,431.6 lbs., Royal's Aster now ranks fourth in her breed for amount of milk produced during a 365-day lactation. With the exception of relief milkings on a few occasions done by Lee's Hill manager, Vernon Hull, she was milked through the entire lactation by Carl Stookey.

Some of our readers may remember "Aster" from the 19th Annual Hoard's Dairyman Cow Judging Contest when she was top cow in the Brown Swiss class.

Check Analysis When Buying Fertilizers

Buying standard brand fertilizers is always a good practice. Michigan State College soil scientists explain that some farmers pay "high prices for fancy names" and end up with very little plant food for the dollars they spend.

It's always wise to purchase fertilizer on the basis of cost per unit of plant food, the soils men contend. The analysis of the fertilizer should be on the bag or on a tag attached to the bag.

If it reads 3-12-12, that means there are 27 units of plant food for each hundred pounds total weight—three units of nitrogen; 12 units of phosphoric acid; and 12 units of potash.

If the sum of the figures in the analysis (total nitrogen, available phosphoric acid, and water soluble potash) is less than 20, it is low grade. As a rule, the lower the analysis, the greater will be the cost per unit of plant food.

The farmer should figure the price per unit of plant food for any "new and unusual" fertilizer and compare it with costs for standard fertilizers. Then he will know whether or not it is a good buy.

Unwarranted claims, not supported by reliable experimental data, are frequently made for certain low analysis organic by-product materials. Exorbitant claims have been made as to the effect of some of these materials not only as a source of plant food nutrients, but also as soil conditioners.

"Order your fertilizer early," is also good advice, the soils men say. Make plans for next year's fertilizer needs and get orders in so you will be sure of adequate supplies.

Barn Odors in Winter

Control of odors in the barn is one of the problems which must be overcome when the herd is stabled constantly for the winter. Careful attention to two phases of herd management will overcome the difficulty, says Lester Legrid of the Wisconsin State Department of Agriculture. One is care in handling feed and the other is good ventilation. The purpose, of course, is to keep strong odors out of the milk.

Two types of feed may cause trouble, Legrid pointed out. One is silage and the other is brewers grains and mashes. These feeds should always be given to the cows after milking. It is also a good practice not to leave silage exposed in the barn or silo entrance during milking and to remove any surplus from the feed alley.

Good ventilation will keep the barn free of both feed and barn odors. It is especially important to have plenty of fresh air before milking is started. A well ventilated barn is also essential to good herd health.

1951 Seed and Fertilizer Supply

(Continued from page 63)

demands. Its increased use will bring a greatly increased demand. There is plenty of good seed.

BIRDSFOOT TREFOIL . . .

Birdsfoot trefoil is becoming more and more popular, particularly in the eastern and western parts of the nation. It is a poor seed producer and difficult to harvest. Improved methods of handling for seed production are being studied. At present, however, seed supplies are apt to be somewhat limited and high in cost.

TIMOTHY . . .

Supplies appear to be much larger than last year but considerably below normal. Prices should be much lower than in 1950 but above the average.

RED TOP . . .

The supply is rather short, but there's more than last year. Unless an unexpected demand develops, there should be enough.

WHITE CLOVER . . .

Supplies are larger than last year but below normal. Increased demands for lawn seeds have aided market conditions.

ORCHARD GRASS . . .

The supply is ample and users in the southern states where it is most in demand should be able to obtain what they need at a reasonable price.

BROME GRASS . . .

A record supply is available and additional imports are coming from Canada. The demand may depend somewhat on the amount of alfalfa seeded, since it is often sown with alfalfa. Brome is a difficult seed to clean and when grown in quack infested areas, is often infested.

KENTUCKY BLUEGRASS . . .

The seed crop is a little smaller than last year but above average. The market may well be influenced by the amount required for lawn purposes. Home-building has grown and bluegrass is popular for the lawns.

FESCUES and CRESTED WHEAT GRASS . . .

The supply is somewhat larger, but the demand for certain strains may continue high. Crested wheat grass supplies are larger than last year, and lower prices may increase its use.

SUDAN GRASS AND MILLETS . . .

The supplies of sudan grass are down but they should be adequate. If no unexpected demand develops for emergency crops, there should be no shortage of either sudan or millets.

WINTER ANNUAL CROPS . . .

Vetch, rye grass, lupines, and winter peas seem to be in good supply and should be available.

SEED GRAINS and CORN . . .

The 1950 grain crop was good and harvest conditions were generally fairly favorable. Late fall weather pulled some corn out of the slump of the wet summer. Considerable quantities of certified grain are entering trade channels, and a shortage doesn't seem probable.

FERTILIZERS . . .

The seed situation looks fairly good for the next year but the fertilizer situation is a bit more serious, according to Prof. C. J. Chapman, of the University of Wisconsin.

Superphosphate production for 1951 will be down 20 per cent because there will be a short supply of sulphur, a necessary ingredient. The nitrogen situation is becoming more and more critical. Most of the synthetic nitrogen fixation plants were built for the production of gunpowder and the war situation may convert them back again.

The best advice to farmers who will need fertilizer is to place orders now and accept delivery when it arrives. Haul it home and store in a dry place. Don't pile it over seven bags high.

The physical condition of fertilizer that is being batched and bagged now is excellent. But in the spring, due to the great volume of orders, there may be some shipment of "green goods," or fertilizer that has not been sufficiently cured.

There has been some advance in prices during the late fall months of 1950, and there may be more as spring approaches. But despite higher fertilizer prices, the price of farm products should be higher, too. For that reason it should still be profitable for farmers to increase the use of fertilizers.

"Even if she is a grand champion, she'll have to have her calf in the barn like other cows."

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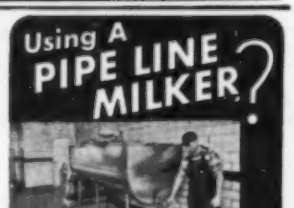

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More Grass On Fewer Acres

There is no reason to boast of 100 acres in grass if more forage may be raised on 60 acres. Here's way to larger yields.

C. M. HARRISON

WITH all our talk about the use of grasses and legumes for feeding, green manure, and cover crops, the tendency has been to promote the idea of more acres of grass. In areas where forage crops are regularly grown and used, it might be worthwhile to think in terms of more grass but less acreage.

Some people believe that we now have too many acres of poor grass being used as pasture and hay and that we lose too many acres of new seedlings through failure to adopt proper cultural practices. The losses in new seedings is reflected in both the quantity and quality of our forage crops. Holding over of old hay fields to make up partially for the loss of new seedings seems to be a general rule rather than an exception. Fewer acres of excellent forage might let some of our poorer, rough, permanent pasture either return to hardwood forest or be planted to pine trees.

Producing more forage on the regular rotation land by good practices would do much toward relieving the need for using these rough depleted pasture lands which tend to multiply rather than lessen the headaches of the average farmer. Waiting and hoping for a new forage plant which will turn poor land into excellent pasture without any further improvement of the land has resulted in too many acres of poor forage for livestock. Concentrating on the rotation land with practices which in many cases have doubled forage production per acre, seems to offer the best chance for more and better pasture and hay.

Little Glamor in Preparing Seed Bed

Good seed bed preparation has a minimum of glamor for the farmer. It is hard work and usually done at a time when speed seems all important. Seed bed preparation for the forage crops runs all the way from none, where seed is scattered on top of the pasture field, to a well prepared seed bed to which has been added lime where needed and a liberal amount of fertilizer. Nowhere in agriculture do we practice such a wide variety of methods and with a consequent wide variety of results.

In establishing the small seeded legumes and grasses, the seed bed should receive maximum rather than minimum preparation. The competition from existing vegetation such as inferior grasses and weeds should be held to a minimum. When completed, a good seed bed for the forages should be firm, fine, and well supplied with lime and fertilizer. The better the seed bed preparation, the more chance the legumes and grasses have of survival, establishment, and vigorous production. Attempting to get by with a minimum of seed bed preparation is in the main unsuccessful.

A fine, firm seed bed helps to prevent too deep planting and makes for better contact between seed and soil. Because of the small amount of stored food in the seed of forage grasses and legumes, the seed bed should be such as to encourage shallow planting and quick emergence of the seedling plants.

How to Apply Lime and Fertilizer

A seed bed, properly worked, is not an ideal place for forage plant establishment unless there is incorporated into it the necessary minerals for good plant growth.

Lime supplies the calcium so essential to the growth of many of our legumes. Some soils contain sufficient lime but in most cases an inexpensive soil test will remove any element of doubt as to whether lime should be applied and how much. Once lime is ordered be sure it is applied to the field prior to seeding rather than stockpiled for an indefinite period in the barnyard or a corner of the field.

At or just prior to seeding time a fertilizer containing both phosphorus and potash, the analysis varying with soil type, should be applied. We make a general recommendation of 200 pounds per acre per year for any forage seed containing a legume. If the stand is to be left for two years in the rotation, 400 lbs. of fertilizer can probably be best put on at seeding time. If left for more than two years, an additional 200 lbs. can be applied as a topdressing for each year following the first two.

Adequate fertilizer for forage production has been the exception rather than the rule. Poor establishment of legumes and poor production as hay or pasture is too often the result of insufficient mineral fertilizer.

Fifty to 100 Per Cent Increase Possible

Selecting a forage to grow on a properly prepared seed bed has become standard procedure. Red clover, with or without timothy, and alfalfa or alfalfa and bromegrass comprise the largest share of the hay and pasture acreage on rotation land in the northern half of the United States. With these two legumes and grasses, if handled as a crop rather than an afterthought to grain sowing, it should be possible to realize a 50-100 per cent increase in hay, pasture, and green manure yields.

Once established, most new seedings should be neither cut nor pastured during the seeding year. Straw following combining should be removed. If combined high, the straw should be cut with a mower, raked and removed from the field. Disease and other complications, such as smothering of seedlings, occur much more frequently where straw is left on the field.

If the field is to be used as pasture, try not to overgraze it. Most upright growing legumes and grasses will persist much longer and be more productive if the field is grazed no lower than six inches. Allowing top growth to remain after grazing, makes for quicker recovery and a much better season long pasture. Close grazing followed by drouth leaves the field unproductive and recovery growth at a minimum. If at all possible, rest the field for a month during the early fall to insure adequate root storage for overwintering.

Plow Up Forage Fields More Often

One of the bad practices from a forage production standpoint is to leave the field for several years after the legumes have disappeared. Once the legumes have gone, the field is not only far less productive but the quality of the roughage has become poorer. Keep the field as a forage field only so long as it continues to be productive.

Eire's Traveling Creameries

In marginal dairy areas of Ireland the traveling creamery has encouraged many farmers to double their milk supply.

MARGARET VEALE

HOME dairying had been the custom of most of Ireland until the end of the last century when creameries were first introduced. By 1925 all the main dairying districts were suppliers to the creameries. However, in the more isolated and poor areas where the cow population was small and widely dispersed and the supply of milk insufficient to merit the setting up of a creamery or separating station, butter had to be produced at home.

This system of home buttermaking was most unprofitable and in 1933-34 when a slump in world prices of butter occurred, producers of home-made butter were receiving less than the product cost to make. To give the struggling farmers in these producing districts a chance and to bring them into line with those more successful, an idea, new to any dairying country in the world, was evolved and is being as rapidly developed as conditions permit. This is the traveling creamery designed to bring the main services of established creameries to the smallest and poorest producers even in the more remote districts.

At the present time there are 32 of these traveling creameries in operation and the number is steadily increasing. Each creamery resembles a bus being made up of a lorry chassis fitted with a van body. Ash ribs form the framework of the van which is sheeted inside with iron plates one-half of which are glazed. The floor is made of steel plates.

Its equipment is capable of separating 1,100 gallons of milk on the spot so that the skimmilk is available to be taken back straight away to farmers for livestock feeding. The separator is driven either by the engine of the vehicle or by a separate 6 h.p. petrol engine fitted inside the body. There are also a new milk weighing drum and tank, a new milk pump, a cream tank of about 300 gallon capacity, a separated milk tank and milk, pump, a swing crane and separated milk delivery drum, two spring balances, and a rack for milk samples.

The operations of the traveling creamery have been followed in a number of cases by the erection of a permanent creamery as the need for it develops. It can then provide adjacent garage accommodation for further traveling creameries.

Each vehicle operates from a central point and in most cases three stopping places are visited each morning though they may be as much as six miles apart. On arrival the milk is taken from the supplier, tested for purity and butterfat, and separated. The total capacity estimated for each stopping place is about 2,000 gallons, and the cream is brought to the creamery by 1 o'clock.

The traveling creamery soon becomes a good guide to the quantity of milk available in any particular district and it is possible to decide whether the area is capable of supporting economically the usual type of cream-separating station. Its first cost is less than that of the usual creamery and since it takes the place of three separating stations, is therefore considered more economical.

Naturally, its rate of depreciation is heavier than that of a stationary creamery. There is a possibility that the quantity of butterfat left in the separated milk may be higher than in that of the permanent stations. This happens usually in winter when traveling creameries do not visit daily and the milk is often separated at low temperatures. Some compensation for this deficiency is that in the districts where these "travelers" operate farmers rear a number of calves and pigs and for this reason do not object to a little extra fat in the separated milk. Another difficulty which has had to be faced in the operation of traveling creameries is that by the time the vehicle reaches the third stopping place farmers might be busily engaged on important work and would not like to stop to bring their milk to be separated.

Still, despite the little drawbacks, these traveling creameries are of real value to the isolated farmers and are proving successful, many of the farmers admitting to have doubled their milk supplies.

—Farmer & Stock-Breeder photograph

At this mobile creamery in County Kerry milk is received, tested for quality and butterfat content, and separated. Skimmilk is returned to the dairyman for feeding calves and pigs. The traveling creamery appears to be a forerunner of permanent creameries in certain areas.

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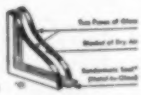

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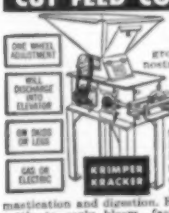

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An Extra 100 Pounds

Here's what Adams County, Indiana, dairymen did to boost their average butterfat production from 297 to 410 pounds.

IMPROVED farming methods, including a well planned fertilization, liming, and crop rotation program, plus plenty of good quality pasture and hay are credited by Adams County, Indiana, dairymen for an amazing increase in butterfat production during the past few years. Members of the Adams County Dairy Herd Improvement Association compiled a herd average of 410 lbs. fat for the testing year ending October, 1950. This is an increase of well over 100 lbs. fat per herd from the 297-pound average back in 1924, the first year the association was in existence.

Other factors, such as the proper use of grain, culling low producers, and the careful selection of bulls for breeding have contributed to the increase in butterfat production. However, the dairymen, the DHIA supervisor, Elza Lynch, and County Agent L. E. Archbold attribute the greatest part of the increase to the fertilization and pasture program.

Association Organized 26 Years Ago

It was 26 years ago that the testing association was started in Adams County, with Roy Price, a native from southern Indiana, the first tester. The association has been functioning each year since and Adams County DHIA No. 2 was organized recently because more dairymen wanted to participate in this work than the original association, which has 40 members, could accommodate. Mr. Price recalls that in those early days of testing work, a cow producing 300 lbs. fat was considered a good cow and one producing 20 lbs. milk twice a day was not to be sneezed at. For the average dairymen these figures are still fair production, but not for the members of the Adams County DHIA. Twenty-one of the herds in the Adams County DHIA finished the past testing year with a butterfat average of more than 400 pounds. In 1949, 12 of the herds topped this mark while in 1948 only eight reached the 400-pound mark.

512-Pound Average

During the past year three of the herds in the association topped the 500-pound mark, the highest herd owned by Paul Liechty and Son finishing with an average of 512 lbs. for 18 cows. This herd returned an average income above feed cost of $308.86 per cow, a truly excellent record. The herd had seven cows in the 400-500 pound class, three in the 500-600 pound class, and one produced more than 600 lbs. Mr. Liechty farms just 90 acres but produces all of his own feed. He makes one acre of land produce as much as two formerly did and raises as much feed on his farm as many farmers do on a farm twice the size.

In 1949 members of the Adams County DHIA won four of the ten gold medals in Indiana for outstanding production. In 1950 these same dairymen won eight out of 18 such medals in the state.

The soil building program in which these Adams County farmers have been participating for several years has attracted wide attention. Mr. Lynch, the DHIA supervisor, has been keeping a close tab on this work and has figures to prove that the dairymen who fertilize and lime their farms regularly are the ones with the highest butterfat averages. These dairymen have learned the value of plenty of good pasture and hay.

Most of the dairymen use a cropping program of corn, followed by wheat or oats and a mixture of grass seed sown in the small grain. Many of these farmers obtain two or three months of good pasture the first year after the small grain is harvested. Then for the next year or two, depending on the stand of grass, the fields are pastured and made into hay. When this is plowed up it goes into soybeans or back into corn.

Use 500 Lbs. Fertilizer Per Acre

The grass mixture for pasture and often for hay consists of ladino, brome, alfalfa, red clover, and timothy. The average fertilizer application to the pasture is 500 lbs. per acre of 0-20-0 or 0-20-20. This is applied with the grain drill as a top-dressing early each winter.

When the grass is sown in the small grain, 400 lbs. of 3-12-12 fertilizer are applied. The fertilizer is sown with the grain and grass. For corn and soybeans many of these farmers use from 200 to 400 lbs. of fertilizer. Lime is applied at the rate of one ton per acre per year, but is applied only every two or three years. The ground is tested for acidity after it is plowed and the amount of lime determined by the condition of the ground.

This fertilization and liming program has doubled the pasture and hay yields. Where the average farmer gets about two to three tons of hay per acre, these dairymen get five to six. Pasture is lush and green all summer long and the summer heat or drouth has little effect on it. The cows keep producing at a high level throughout the hot months of July and August.

Many of the dairymen have bluegrass and Balbo rye for early spring pasture. About May 15 or June 1, depending on the weather, the cows are turned into the brome-ladino-alfalfa pasture and spend the rest of the summer there. Most of the farmers have two or three fields of this pasture, or if it's a large field they divide the field into two or three parts and graze one while the others are permitted to grow again. Sudan grass is used only as an emergency crop and sweet clover is used by some, pastured for a few weeks and then plowed under and put into corn. Many of the dairymen make the first crop of grass

# of Butterfat

by Simon M. Schwartz

into hay, then pasture it the rest of the year. A few use grass silage, putting the first crop into the silo because drying conditions for hay are often unfavorable that time of the year.

Feed Hay All Summer

Most of the members keep hay in front of their cows all summer long. The cows eat some hay while on pasture,—this keeps them from bloating. There are very few cases of bloat on record among the DHIA members.

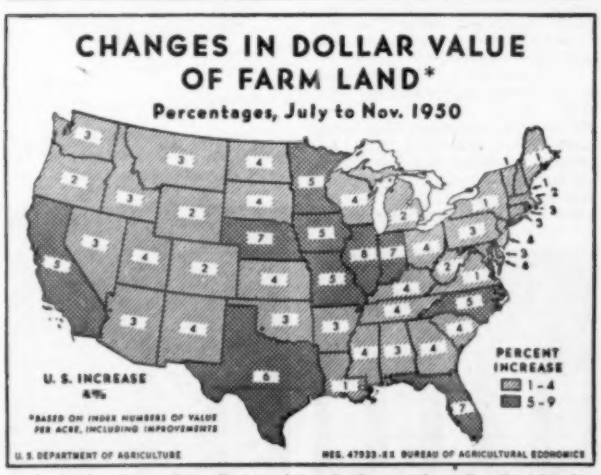
Grain is fed throughout the year, usually at the rate of one pound of grain for every four pounds of milk produced. About 24 lbs. silage is fed twice a day. The grain ration averages 14 per cent digestible protein, the bulk of the protein consisting of soybean oil meal. The most common ration fed by these dairymen consists of 500 lbs. corn and cob meal, 400 lbs. oats, 200 lbs. bran, 250 lbs. soybean oil meal, 75 lbs. molasses, 20 lbs. mineralized salt, 10 lbs. calcium, and 20 lbs. bone meal. The cows are allowed as much hay as they will eat and the average dairy cow will consume about 30 to 35 lbs. a day.

Fewer Breeding Troubles

Not only have these better farming methods resulted in bigger crop yields and higher butterfat production, but many of these DHIA members have learned that their breeding troubles in cows have become fewer. An example of how such troubles disappear can be gleaned from the L. Reuben Schwartz herd. Schwartz is a member of the association. For many years he was a tenant on a good farm and during this time had one of the best producing herds in the association. Then he bought a farm that was badly run down. The first three or four years his herd average dropped considerably and his breeding troubles multiplied greatly. But by proper liming, fertilization, and feeding and with plenty of good pasture and hay, Schwartz improved his herd until the fifth year when his butterfat average was again near the top and his breeding troubles had almost vanished. According to tester Lynch, several other members of the association have had similar experiences.

Rolandes Liechty, whose Holstein herd for the second year in a row topped the 500-pound mark, now pastures his entire herd all summer long on the same acreage which formerly carried the herd just two months during May and June.

These Adams County dairymen have not only increased their production greatly, but their net profit has increased by an even larger margin. For several years during the mid-30's, the association had trouble in securing enough members to keep going. Now more and more farmers are clamoring to get in. They have seen the benefits obtained by the members and need little encouragement to get into this work.


CHANGES IN DOLLAR VALUE OF FARM LAND*
Percentages, July to Nov. 1950
U. S. INCREASE 4%
*BASED ON INDEX NUMBERS OF VALUE PER ACRE, INCLUDING IMPROVEMENTS
PERCENT INCREASE
1 - 4
5 - 9
U. S. DEPARTMENT OF AGRICULTURE
NEG. 47933-51 BUREAU OF AGRICULTURAL ECONOMICS

Land values increased in all states during the four months ending November 1. These increases raised the national index four per cent to a new peak of 179 (1912-14=100). This is six per cent above March, seven per cent above a year ago, and one per cent above the previous high reached in November, 1948.

Increases for most midwestern states from July to November were above the national average increases. Illinois led with an eight per cent rise; gains of six to seven per cent occurred in Indiana, Nebraska, Texas, and Florida. However, the average increase for the New England and Middle Atlantic states was only two per cent, and the Mountain states averaged three per cent higher than last July.

In November, land values in 33 states was above the March 1920 peak and in 23 states they were above the peaks reached in late 1948 and early 1949.

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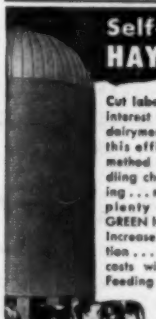

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Effect of Udder Treatments On Milk Let-Down

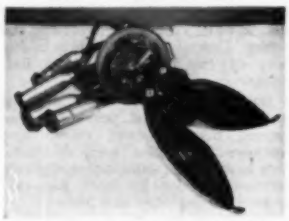
Ohio tests indicate considerable time is saved in milking by following certain practices to stimulate milk let-down.

C. E. KNOOP and C. F. MONROE

TO MILK cows rapidly and completely dry by either hand or machine requires proper treatment of the cow at all times. Certain methods of treating cows may seem to be right but may not be fully acceptable by the cow, especially at milking time. Tests at the Ohio Experiment Station have shown that massaging the udder of the cow from 10 to 15 seconds with a wet towel in the cleaning process may save up to one minute per cow in milking time. The time is saved by the pre-stimulation of milk let-down that would be caused by the milking machine under normal, no treatment conditions.

Udder Treatments

In the tests, two groups of cows were used. The first group of cows received five different treatments of



Lower side of milking machine lid. Showing valve attachments for diverting milk into the latex bags for the first and second 45 seconds of milking.

the udders; each treatment was studied for a period of eight days. The treatments were as follows:

1. No treatment or the control.
2. Brushing or rubbing the udder with a dry hand for 10 to 15 seconds to remove the loose dirt.
3. Cleaning the udder with a cool, damp towel for a period of 10 to 15 seconds. All towels had been previously boiled and wrung from water and stored in a dry bucket until used.
4. Cleaning the udders with heavy towels wrung from hot (120° F.) water.
5. Cleaning the udders with heavy towels wrung from hot (120° F.) water followed by removing one or two streams of milk from each teat with the strip cup.

The reaction of the cows or the rapidity of let-down of milk was measured by a specially equipped milking machine and a stop watch. The amount of milk obtained in the first 45 seconds of milking was compared with the amount obtained during the second 45 seconds of milking. During the second 45 seconds the quantity of milk obtained was the same for all treatments, varying from 4.1 to 4.2 pounds. This indicates that regular milk flow had been reached after 45 seconds of milking time, regardless of treatment.

However, during the first 45 seconds of milking time, the comparison of the amounts of milk received show that gently cleaning the udders one minute before milking with a wet towel taken from a dry bucket or wrung from hot water stimulated the rapid let-down of milk. Temperature of the wet towels or use of a strip cup appeared to be unimportant.

The results of the first trial emphasized the fact that the milking act without any pre-milking treatment becomes the stimulant for milk let-down. In addition, this work also showed that gently cleaning the udders with wet towels before milking stimulated the rapid let-down of milk. This information resulted in two questions:

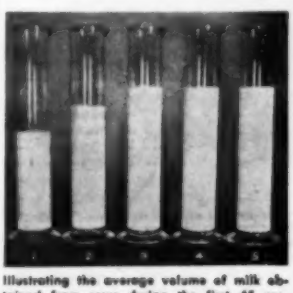
1. Will removing one or two streams of milk from each teat (strip cup) be sufficient stimulation for rapid let-down of milk? and
2. Is bathing udders with hot water superior to the use of wet towels wrung from hot water?

Four Treatments

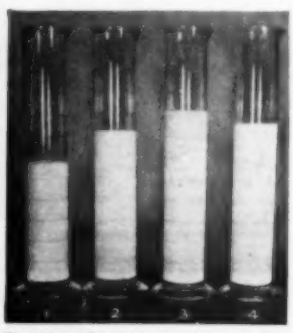
A second trial was undertaken to test the efficiency of these udder treatments. Four treatments were used:

1. No treatment or control.
2. Use of strip cup — removing one or two streams of milk from each teat.
3. Cleaning udders with a heavy towel wrung from hot water (120° F.) followed by the use of a strip cup.
4. Same as three except that the water was allowed to stay in the

(Continued on next page)



Illustrating the average volume of milk obtained from cows during the first 45 seconds of milking time after various pre-milking treatments: 1. Control, no treatment. 2. A dry hand brush or massage. 3. Cleaning (massage) with a damp cloth. 4. Cleaning with a towel wrung from hot water (120 degrees F.); and 5. Cleaning as in No. 4, plus the use of a strip cup.



Illustrating the average volume of milk obtained from cows during the first 45 seconds of milking time after various pre-milking treatments: 1. Control, no treatment. 2. Use of a strip cup. 3. Cleaning with a towel wrung from hot water (120 degrees F.) plus the strip cup. 4. Hot water (120 degrees F.) bath plus a strip cup.

towel so that this treatment amounted to almost bathing the udder with hot water.

Average milk productions during the first 45 seconds of milking time are illustrated. This again demonstrated that proper treatment of the udder one minute before milking is necessary for the rapid let-down of milk.

The milk production of the cows was not influenced by any of the four treatments. The only difference was in the milking time. Compared to the control or no treatment, the use of the towels wrung from hot water and followed by the use of the strip cup shortened milking time 54 seconds. The use of the udder bath and strip cup shortened the time only 34 seconds. However, cows appeared uneasy when receiving an udder bath with hot (120° F.) water which may account for the slight lengthening of the milking time with that treatment. Use of the strip cup alone reduced milking time by only 18 seconds.

These experiments indicate that for the average milking operation it will save considerable time over the long period to pre-stimulate milk let-down. Four practices are suggested to aid in the efficiency and completeness of the milking operation:

1. Proper stimulation for cows to let-down milk before attaching a milking machine by: (a) Observing regular hours and procedures in milking. (b) Spending from 10 to 15 seconds in cleaning the teats and udder with a towel removed from clean, warm water. (c) Removing one or two streams of milk from each teat into a strip cup.

2. Allow one but no more than two minutes to elapse between massaging the udder and attaching the milking machine.

3. Remove teat cups when milk flow stops. As all quarters may not milk out in the same length of time, teat cups may have to be removed individually. Damage may be done to the teats and lower part of the udder by leaving the machines on after the milk flow has stopped.

4. Milk cows dry. Generally this can be accomplished by the machine. Certain cows may require hand stripping.

EDITOR'S NOTE:—This article was reprinted from the September-October issue of Ohio Farm and Home Research.

37% of All DHIA Cows Are Registered

Approximately 37 per cent of the cows now enrolled in dairy herd improvement associations are registered, according to estimates made by state extension dairymen and compiled by the U.S.D.A. Bureau of Dairy Industry. In 1940, the last time a similar survey was made, 32 per cent of the cows in DHIA herds were registered.

The Bureau reports that on January 1, 1950, there were 404,293 registered cows on test in local associations in all the states and Hawaii. This is 37.1 per cent of 1,088,872, the total number of cows on test.

In the following 10 states, 50 per cent or more of the cows in DHIA herds are registered: Ohio, North Dakota, Kansas, Massachusetts, New York, New Hampshire, Pennsylvania, Delaware, Indiana, and Maine.

Approximately 48 per cent are registered in the following states, where more than half of all DHIA cows are located: Minnesota, Iowa, Missouri, Wisconsin, Illinois, Indiana, Ohio, Michigan, Pennsylvania, and New York.

The number of registered cows by breed is: Ayrshire, 25,800; Brown Swiss, 15,692; Guernsey, 84,249; Jersey, 70,867; Holstein, 198,027; and other breeds, primarily Shorthorn, 9,658.

Dr. J. F. Kendrick, head of dairy herd improvement investigations, says the rapid growth of the artificial breeding program has been one of the most important reasons for the increase in registered animals in DHIA herds in the past 10 years. Membership in an artificial breeding association has made it possible for the dairyman with a small herd to have the services of high quality registered sires at comparatively low cost. The availability of these superior blood lines has been an incentive for DHIA members to purchase one or more good registered cows from which to raise their own herd replacements. This is resulting in a gradual shift from grade to registered animals in many DHIA herds.

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Brush the spray into and through the hair with a stiff bristle brush. An ordinary scrubbing brush will do.

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Repeat treatment in three weeks. Some nits and lice may not have come in contact with the spray on the first treatment.

DO NOT use spray oftener than every three weeks. Do not use more than 2½ ounces per head. Normal healthy cattle are not burned or blistered when directions are followed. In fact, treatment with Gulf Livestock Spray should improve the appearance of their coats.

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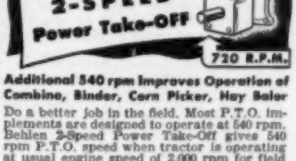

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Dairy Type--- what is it worth to You?

(Continued from page 61)

breeding worth than is one high record. This is because environmental conditions, management, disease, and many other factors can affect one record very materially.

The same thing seems to be true when only one (and the highest) classification rating of an animal is considered rather than several ratings. Therefore, the average of several classifications is a much better guide of her true breeding worth for type than is one rating.

Why Type Ratings Vary

Extensive research with Ayrshires at the West Virginia Agricultural Experimental Station has shown that the type classification rating of a cow varies from time to time. Age, stage of lactation, degree of fleshing of the animal, and the differences in opinions of the classifiers affect these ratings very materially. The seriousness of defects in udder, feet, and legs are sometimes appraised very differently by different inspectors. The fact that borderline cows may be placed in one group one time and another group another time, even though the actual score difference from one class to another may be only one point or less, makes for considerable variation in type ratings of the same animal classified several times.

In order to make the type classification program a more potent factor in dairy cattle improvement, research indicates that certain changes in the program should be made. In the past only the highest rating of each animal has been official. In other words, a cow could always be reclassified with a possibility of a raised rating unless she, of course, already had the highest possible rating. However, her rating could never be lowered. She might be classified Excellent at four years of age, and although her udder might break down at six years so that she could not be classified more than Fair, yet she would always be an Excellent cow as far as the records are concerned. The chances are that many bulls would be sold from this cow because of this Excellent classification.

Guernsey Club Led the Way

The American Guernsey Cattle Club was the first breed association to require the reclassification of Excellent and Very Good cows to determine if they remained in this category.

Just recently the Ayrshire Breeders' Association has inaugurated a program whereby every animal in a herd may be reclassified each time the herd is submitted for classification. In the future each rating for an animal may be recorded instead of only the highest one. In addition, a numerical point system of classification will be used. Instead of recording Very Good, Good Plus, etc., the record will be 87.2 or 83.1, whatever it may be. This will eliminate much of the variations in type ratings due to the borderline cases mentioned previously.

A program offering these changes is not going to be popular with certain breeders interested in selling bulls at a high price who connive in every way to get their animals rated as high as possible. Many of these breeders don't have to milk cows for a living nor do they have the improvment of the breed really at heart. Many are in it for the fun and diversion it gives them. Their cattle are prepared long in advance for the day of classification. They are clipped, washed, bred, fed, handled, and then led in such a way to get the highest possible rating. Once these high ratings are obtained, which can never be lowered, they are all set to sell bulls and females and make a "killing".

Contrast the ratings made in that kind of a herd with those in a farmer breeder herd where the cattle receive no special preparation and often are driven in from the pasture after the inspector arrives. They are usually in many stages of lactation, unclipped and unfilled, and as might be said, "in their every day clothes". Certainly if the breeder that prepares for classification far in advance has to reclassify each animal in the herd every time he wishes to classify instead of only two-year-olds that have not been previously classified and those he hopes to raise, it will be found that many of his cows will not be looking at their very best and a more accurate appraisal can be made of how they look in their every day clothes.

Use in Selecting Heifers

The question was raised several years ago as to whether the type classification program, as applied to cows, can also be used for the classification of young heifers. Research at the West Virginia Agricultural Experiment Station has shown that the majority of heifers in a low-type group at 6 to 12 months of age remained in a similar group after being rated as milking cows. Those in the middle group seemed to remain there, and those in the upper groups were still above average when they were classified as 3-, 4-, and 5-year-old cows.

The results indicate that a reasonably accurate prediction of a cow's future conformation can be made on the basis of one or several classifications as a young heifer. With improvement in classification techniques, it may be possible to improve this program materially in the next few years. On the other hand, wide variations may occur between the ratings of some young heifers and their ratings following freshening, because correct appraisal of the udders of heifers is very difficult, considerable research on this phase of classification is needed.

Why Classify Bulls?

One of the most controversial phases of type classification programs has been the classification of bulls. It should be noted immediately that there is little or no relationship between the classification of a bull and the production records of his daughters, and it certainly is not wise to select for production on the basis of type of sires. On the other hand, there is a definite relationship between a sire's type rating and the type rating of any one of his daughters. This relationship is about two-thirds as high as the correlation between a cow's type rating and the rating on one of her daughters.

A prediction of the type rating of any daughter from classified parents may be made by using the herd av-

erage for type and the ratings of the sire and dam as follows:

Predicted rating on daughter = herd average + 1/3 (dam's rating — herd average) + 1/5 (sire's rating — herd average).

One criticism of bull classification is that on many farms the bull must be classified in a bull pen which may be quite muddy or may be quite dark or small. In other cases the bull is quite unruly and would prefer to paw and present himself in a position which, from the inspector's viewpoint, certainly is not conducive to a true evaluation of his conformation

Nevertheless, since most dairy breed associations have approved the classification of bulls, it should be emphasized that limited attention should be applied to the type of a sire and more emphasis placed on the dam's rating when selecting for type in dairy cattle.

To properly appraise the type classification program in its entirety from the standpoint of its contribution to the improvement of the dairy cattle population is practically an impossibility at this time. As was pointed out previously, this program is young in years. Time must pass; generations of cattle must be bred before a more complete analysis can be made.

On the other hand, we are living in the present. Dairymen making a living from milking cows want to know **now** what the value of the program is. We must be realistic in its appraisal. In being realistic, we might ask the question, "What are the ingredients that go to make up a great herd of dairy cattle?"

Certainly high production is one and the kind of type that makes for good uddered, good legged, healthy, and long-lived cows, is another and these should be accompanied with proper feeding, management, and care, etc. Research has shown that udders which conform to the high type classification scorecard are less subject to mastitis and injuries than those that conform to low type classification. The overall objectives of the type classification program is to develop a dairy cattle population with those type features that add to their attractiveness and also to their utility.

Dairymen might ask themselves this question, "Did I ever see a really great herd of cattle where no attention had been given to type?" We doubt if such a herd exists because the two ingredients of high production and good type are both important and very much a part of a great herd. In developing a great herd considerations for both must be made.

Foolish to Select on Type Alone

As was pointed out earlier, type and production are not closely related. They must both be selected for in breeding a good herd. Our research at the West Virginia Station has shown that dairymen would be foolish to try to make any satisfactory increase in production in their herds by selecting on the basis of type only. On the other hand, when selecting for production alone, not a great deal of progress will be made in improving the type of the herd. Consideration of both type and production is necessary if the herd is to be improved in these characteristics.

When selecting for increased production we have our records as a tool. For selection for improved type we have our classification ratings to guide us. Bulls should be selected with a knowledge of the production level of the herd and the type faults most prevalent in that herd. For example, if many members of the herd have loosely attached udders and bad feet, it would be wise to use a bull that is siring daughters strong in those characteristics if he meets the other qualifications.

Even those dairymen using artificial breeding service can select to a certain degree the bull they wish to breed to. If a young bull is to be selected, then the type ratings of the sire and dam and all close relatives should be carefully considered as well as all production records, and the conditions under which they were made.

Mail order bulls may be purchased with a reasonable assurance of securing the right kind of type and production if the two tools are used to their fullest extent. In this way improvement may be made in both factors so essential to the development of better dairy cattle.

Plant Fieldmen's Conference

The 1951 Dairy Plant Fieldmen's Conference, sponsored by the department of dairy industry, University of Wisconsin, will be held in Madison on the afternoon and evening of February 1, and the morning of February 2.

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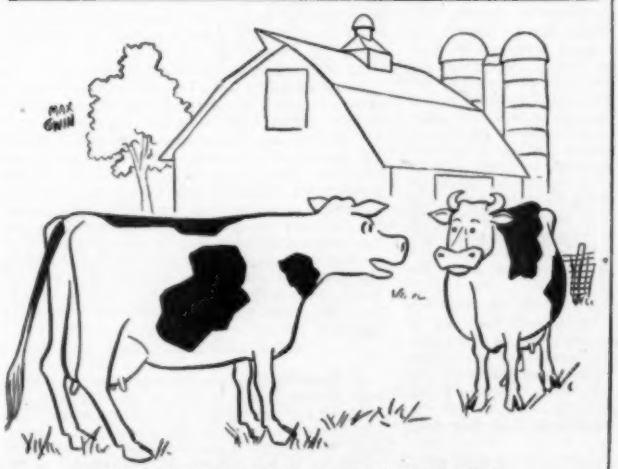

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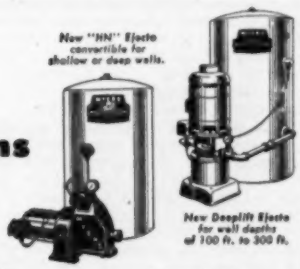

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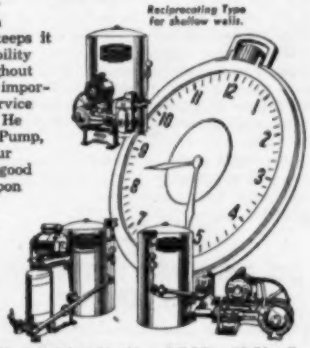

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EDITORIAL COMMENT

DRAFT POLICY MAY BACKFIRE

IF THE government is going to exhibit foresight and avert serious food shortages, it must act now to provide for our basic needs during the next few years. Throughout the country draft boards have been draining 19- to 26-year-old men from the farms because they provide the large reservoir of non-exempt men of combat age. Veterans of the last war and men with dependents have been generally exempt from call. It naturally followed, of course, that farm youth who were deferred during World War II were available for call at this time.

At the period of decision on present draft policy, the world war situation was not nearly as dark as it is at present. We had bumper supplies of farm products in storage and a very productive crop year. There seemed little justification to forecast a possible food and raw material shortage.

The picture has changed drastically in the past few months, following the entry of the Chinese communists into the Korean war picture. The declaration of a state of emergency by the President and the various national defense measures that have followed point clearly to a period of critical, intense, national effort with its war production, shortage of materials, higher wages, price controls, rationing, and other convulsive developments.

If the current national emergency continues, it is reasonable to expect that American agriculture will be hard pressed to meet the demands levied on it, even with its normal manpower supply. Drain off the cream of the working crop, the 19- to 26-year-olds, and food and raw material production simply cannot be maintained. The government must recognize this obvious condition. It should be appreciated, too, that balanced agricultural production cannot be achieved overnight by returning skilled agricultural workers to the farms. Dairy herds, beef herds, and swine herds cannot be built up overnight.

It is true that labor-saving machinery and equipment in plentiful supply will make a major contribution to American food production. If the government allocates ample raw materials to farm equipment manufacturers, some of the productive capacity lost through the draft may be recovered through increased mechanization. A beautiful piece of complicated machinery is of no value on a 160-acre farm, however, if the only man left to operate it is well along in years and unable to handle the machinery.

We are not asking for blanket deferment of young farmers simply because they happen to reside and work on a farm. As in the last war, we believe deferments should be selective and be based upon actual production of critically needed foods.

This point seems perfectly clear—every day of delay in developing a long-range, wartime food production policy places our future food supply in added jeopardy.

DO DAIRYMEN LIKE THEIR OWN PRODUCTS?

DAIRYMEN generally have been asking for more and more advertising, publicity, and promotion of dairy products. A few weeks ago, the fact that we might be as much at fault as anyone else was brought out during a dinner table conversation at an annual meeting of one of our largest national dairy organizations.

"Here we are at a dairy meeting," one farmer said, "and do you see any butter or milk on the table?" Each person was served a split roll with one half of it hit very lightly by the chef's butter knife. There was no milk, cheese, or ice cream, and no whipped cream on the pumpkin pie. Cream for the coffee later made its appearance, but even that ran out before it got around the table.

"We gripe about the lack of advertising of our dairy products," another dairyman said, "and we don't even have a good taste of them at our own dairy meetings!"

Whose fault was it? It was probably an oversight. It would have been well worth-while for the person in charge of the banquet to check the menu during the planning stage of the banquet. If the people in charge of serving couldn't serve enough dairy products, we're sure that some of the attending dairymen would have been glad to donate some of their wares.

If we dairymen can't show that we like our own products, how can we expect the buying public to buy more dairy foods?

VITAL WORK IN CONGRESS

"SINCE very early times, in the interest of making more profits, men have attempted to introduce chemicals into foods in order to make a cheaper product appear like a better one." So stated Dr. Clive M. McCay in testifying before the congressional Select Committee to investigate the use of chemicals in food products. Very few people appreciate the importance of the investigations of this committee. Its effect on the future of the dairy industry may be momentous.

Everyone recognizes the superiority of dairy products in human nutrition. Most appreciative of this superiority are the imitators, the opportunists, and the "let's-make-a-fast-buck" crowd. Oleo, filled milk, filled cheese, vegetable oil ice cream, and other similar products are all part of an assailing movement determined to cash in on the reputation and qualities of legitimate dairy products. If the congressional committee can hold itself free and clear from the clamor of selfish interests, it can make one of the most significant contributions to human welfare that has been recorded in this century.

In one part of Dr. McCay's statement, he discusses certain carbonated beverages, which we commonly call "soft drinks." We will not repeat his testimony with reference to the effect of some of these soft drinks on teeth. However, there is enough evidence on this one point alone to give us the information whereby Congress can write legislation that will protect the teeth of our children and our adults from the softening and dissolving process that they now undergo when exposed to certain beverages.

The use of non-milk-fat-solids in bread is another important consideration. Dr. McCay testified, "In the Triple Rich Bread, which was originally devised for mental hospitals in New York and which is now widely used in many places, we discourage the use of chemicals in both the flour and bread. In the bread baked and sold in Ithaca we use only unbleached flour. No bromates are used in the Ithaca bakery although we believe the evidence is sound that the amount of bromates employed in yeast food is harmless. No gypsum is added to our bread although much of the calcium in the bread of the whole nation is present as calcium sulfate. We doubt if such calcium is well utilized and much prefer that the calcium of bread be contributed by non-fat-milk-solids or some other more assimilable form.

"Bread and baked goods must be watched with extreme care by all of us because the staff of life plays such an important part in the nutrition of most of our older people and all of our low income group. For this reason, we need expend great efforts to see that bread is baked from high quality ingredients, that it has the best possible formulas, and that it is free from injurious substances.

"Substances that are used daily by vast numbers of people, such as bread, must be given continuous attention by nutritionists. This holds for most processed foods."

Dairy farmers and their organizations can well support the action of the congressional Select Committee to investigate the use of chemicals in food products. We should stand ready to give not only moral and popular support, but technical support through our industry facilities and our storehouse of technical information.

LET US NOT BE BLIND

THE recurring surplus, or overproduction bugaboo, can be knocked out. Surpluses are often mere illusions. They disappear quickly in the face of crop failures and of new uses for the product. Consider the citrus fruit industry. Only yesterday orange growers were faced with surpluses. Creation of frozen, concentrated orange juice not only emancipated the housewife from the tedious job of squeezing oranges but created a shortage of orange groves, the extent of which was beyond the wildest dreams of the orange growers themselves. Let us have high quality, basic, butter, cheese, beverage milk, ice cream, evaporated milk, sweetened condensed milk, and so on, but may we, as dairy scientists, neither exclude the possibility of nor be blinded to the needs for special new food products that contain a relatively high content of dairy products.

It becomes imperative, if dairy products are to maintain their relative position among the numerous food products found on the shelves and in the refrigerators of our colossal supermarkets, that research leading to the maintenance of quality and the creation of new dairy products be started at once. When such products retain the basic nutritional factors, appeal to the eye and palate, and are promoted intelligently, the looming surplus erroneously thought to be overproduction will disappear quickly. We will not need to cry "wolf" so loudly that Washington may come to the rescue.—G. M. TROUT.

GETTING THE MOST OUT OF IT

THE true secret of success among men consists, not as many think, in large opportunities, but in making the most out of whatever opportunity presents itself. It is a great gift, this ability to make things grow. We see so many men in all vocations, throwing away their present opportunities in a foolish hunt for something bigger. They forget that law of promotion as it was defined by the great Teacher: "Because thou hast been faithful over a few things I will make thee ruler over many." Let us apply this principle for a few moments to the farm:

An old farmer, in relating the mistakes of his life, once said to us: "The difficulty with me, I guess, is that I never got the most out of anything. When I went to the district school, I fooled away my time thinking the school wasn't big enough for me and it has been going that way ever since." And so it had. He owned land enough; too much. He plowed and sowed ground enough; too much. His cows were big enough; too big. He always had time enough to waste; too much. But from boy in school to old man he had never learned the great lesson of making the most of everything that came under his hand. It is a great secret but it lies so close to our feet that we overlook it.—W. D. HOARD, March 1, 1907.

A MASTERING of the technique of making high protein silage is one of the most powerful weapons in the armory of the dairy farmer. Few dairy farmers in these days can afford to disregard so powerful a weapon—they are less likely to do so in the future.—H. IAN MOORE in The Home Farmer (England).

SNOWBOUND

by Wm. F. Groves

SNOWBOUND! For the first time in many years our farm home is completely shut off from the outside world. All the roads are blocked with snow. Not a car has passed our house since yesterday afternoon. The reliable milk hauler and mailman, who usually arrive on schedule, have decided that "discretion is the better part of valor." Neither has ventured to leave the protection of his own fireside.

The telephone and electric wires are down. Even the radio refuses to work. All the intricate devices which man has contrived to facilitate his daily chores and to promote easy and rapid communication and locomotion are out of commission. Our next door neighbor is as inaccessible and remote as the North Pole.

The blizzard still rages in all its fury. The fierce, cruel gale roars like a lion and cuts like a knife. The merciless wind, whirling and swirling from every direction, whips the snow hither and yon. Not content with the havoc previously wrought, it piles drifts on the already mountainous drifts.

This is the kind of a day which tries the soul of a true farmer. He finds a hundred additional chores to do. Snow must be cleaned from feed mangers and shoveled away from doors. The cattle must be given extra attention. A little fresh bedding and an added bale or two of choice alfalfa hay often spells the difference between a good husbandman and a poor one. An ample supply of drinking water must be provided. Due to the lack of electric power, the water must be pumped by hand and carried to the barn in pails. The young stock and calves demand and receive special attention. The day calls for self-sacrifice and a conscientious response to duty on the part of the herdsman.

A great philosopher once wrote, "Genius is the infinite capacity for taking pains." These words of wisdom very aptly describe a good herdsman. A good herdsman loves his job. There is a deep and abiding understanding between him and his charges. A good herdsman is never in a hurry. He takes time to watch and study the individual needs of each animal under his care. He is familiar with the idiosyncracies of each animal and he carefully caters to its peculiarities and prejudices.

A good herdsman is never too busy nor is the hour ever too late to restrain him from expending the full measure of his devotion to his humble duties. In the evening, after milking, the deep drawn sighs of satisfaction from the stalls where the contented cows are resting in their clean beds of straw, snugly and placidly chewing their cuds, is ample reward for the time and energy which he has expended. The true herdsman then goes to his rest with the knowledge of a day's work well done.

Last night, shortly after the fierce gale had succeeded in severing our electric current, I lit a candle and groped my way up the creaking stairway to the attic. There in a pile of old schoolbooks I found a battered copy of Whittier's "Snowbound." I blew the accumulated dust of the years from between its musty pages, carried it downstairs, drew an easy chair near a comfortable fire, and proceeded to read the book from cover to cover. I haven't read "Snowbound" since I was a little shaver attending country school and have forgotten most of the beautiful lines of the poem. A few verses, however, still linger in my memory—

"The sun that bleak December day
Rose cheerless over hills of gray."

On finishing, I closed the book softly, drew my chair a little nearer to the fire, puffed my pipe thoughtfully, and closed my eyes in reverie. The vivid picture of that isolated, snowbound New England farm which Whittier sketched so graphically is not so very different from the boyhood home I remember in Wisconsin. We were often snowbound but a blizzard never seemed to disturb the even tenure of our lives.

"Meanwhile we did the nightly chores,
Brought in the wood from out of doors,
Littered the stalls and from the mews
Raked down the herd grass for the cows."

Life was as simple as that in my boyhood. Snowbound, we accepted the additional humble, commonplace tasks which the storm imposed without thought or comment. We were not thwarted by a balky tractor, frozen water pipes, or electric lights that wouldn't work. In this modern age our resources are no longer within ourselves. We place our trust in material things. When we cannot control life by pressing a button or stepping on a starter, our structure for living collapses.

There are, however, fundamental, unchangeable factors in farm life which no modern invention can change. No machine can ever replace the sympathy and understanding which exists between a good husbandman and his livestock. This close relationship between a man and his herd has existed since the day when our ancestors first induced the wild beasts of the forest to creep to man's fireside for comfort and protection. The Bible says, "The good shepherd giveth his life for his sheep." This is the final and ultimate test of a good herdsman.

Questions From Our Readers

How Much Protein?

I have had trouble with mastitis in my herd and would like to know how much protein a cow can take over a period of time without running into the trouble again.
Minnesota. R. K.

Since protein-rich feeds are usually more expensive than those low in protein, we normally speak of the minimum amounts of protein required for dairy cattle rather than the maximum that can be fed.

Experiments have shown that there is no danger from feeding farm animals a considerably larger amount of protein than they actually require for maintenance, growth, reproduction, and the production of milk. By the same token, there is no proof that the heavy feeding of cottonseed meal or other protein-rich concentrates to dairy cattle increases the trouble from mastitis or other diseases. At several experiment stations tests were conducted where cottonseed meal was the only concentrate fed to dairy cattle for a long period of time. There was no effect on mastitis conditions when this was the case.

We believe the best recommendation on the use of protein in dairy rations would be to feed a grain mixture containing approximately 12 per cent digestible protein when above average quality legume hay is fed, such as leafy alfalfa hay or grass silage containing a large proportion of legumes. When only average quality roughage is available, the protein content of the grain mixture should be 14 per cent, while in the case of low or inferior quality roughage, the grain mixture should contain about 16 or 18 per cent protein. In other words, it is uneconomical to provide more than 16 or 18% digestible protein in the grain mixture in practically all conditions.

Sale of Livestock

Reading I. F. Hall's article on income tax laws, I became interested in the subject of sale of livestock.

I plan to buy 100 Holstein calves the first of the year and want to raise and breed them, then sell them just before freshening. Will only half of my net income from these calves be taxable?
An Indiana Reader.

Mr. Hall gives the following reply:

Under the Revenue Act of 1942, there is a statement as follows:

"In the case of cattle consisting of all steers and all heifers not held for replacements in the breeding herd, but kept primarily for sale to others, cannot be considered as the sale of a capital asset."

This would exclude any dealer who buys livestock primarily for sale to others or a purebred breeder who raises bulls to sell to others as herd sires.

Can Hog Losses Be Deducted?

I am a retired farmer and business man and I have a problem to solve in reference to my income tax return that I must soon file.

I own and operate on a 50-50 share basis two dairy and hog farms and this fall on one of the farms our pigs started to refuse eating, then shortly thereafter died. These pigs consisted of 85 just weaned and 11 gilts saved for breeding, all of which died, and all of which were of our own raising. Our veterinarian said it was not cholera but my tenant and I still thought it was. To satisfy our own thinking we sent two of the live weaned pigs, through our dealer, to the laboratory of a feed company. After a thorough examination, they definitely decided that the sickness was cholera. The dealer estimated our total loss to be $1,500.00, one-half of the loss being mine and one-half the tenant's.

Hoard's Dairyman has published many answers to questions regarding income tax; however, I have not seen an answer to my problem, and that is, are my tenant and I allowed to deduct this loss along with other expenses in making up our 1950 return? Your answer to this question will be very much appreciated.
Illinois. I. G. H.

Your loss of pigs and gilts which you have raised on the farm does represent a loss of income which you would have received if they had lived until marketed.

From the standpoint of income tax, losses can be deducted whenever there has been a loss.

You have no loss to report as all your cash costs can be charged as expense in regular farm expenses which are deducted from the cash income received.

If you had purchased these pigs, the purchase price would be your loss. You cannot take a loss on anticipated income not yet received. The loss you will have is a smaller income to report. However, if one should lose enough such income, there might be a loss on the year's operation of the farm. This operating loss can be deducted from other income outside the farm. In fact such operating loss can be carried back and subtracted from the net income of the year before and if this is not enough, one can carry it forward for the next five years.

—I. F. HALL.

Most of my members insist that their calves be eartagged as soon after birth as possible. I think this is a good idea, because it is very easy for a dairyman to forget which calf belongs to which cow. If I eartag them on my first visit after they are born, there is little chance for a mix-up.—H. E. KERBY, tester Jasper, Iowa, DHIA.

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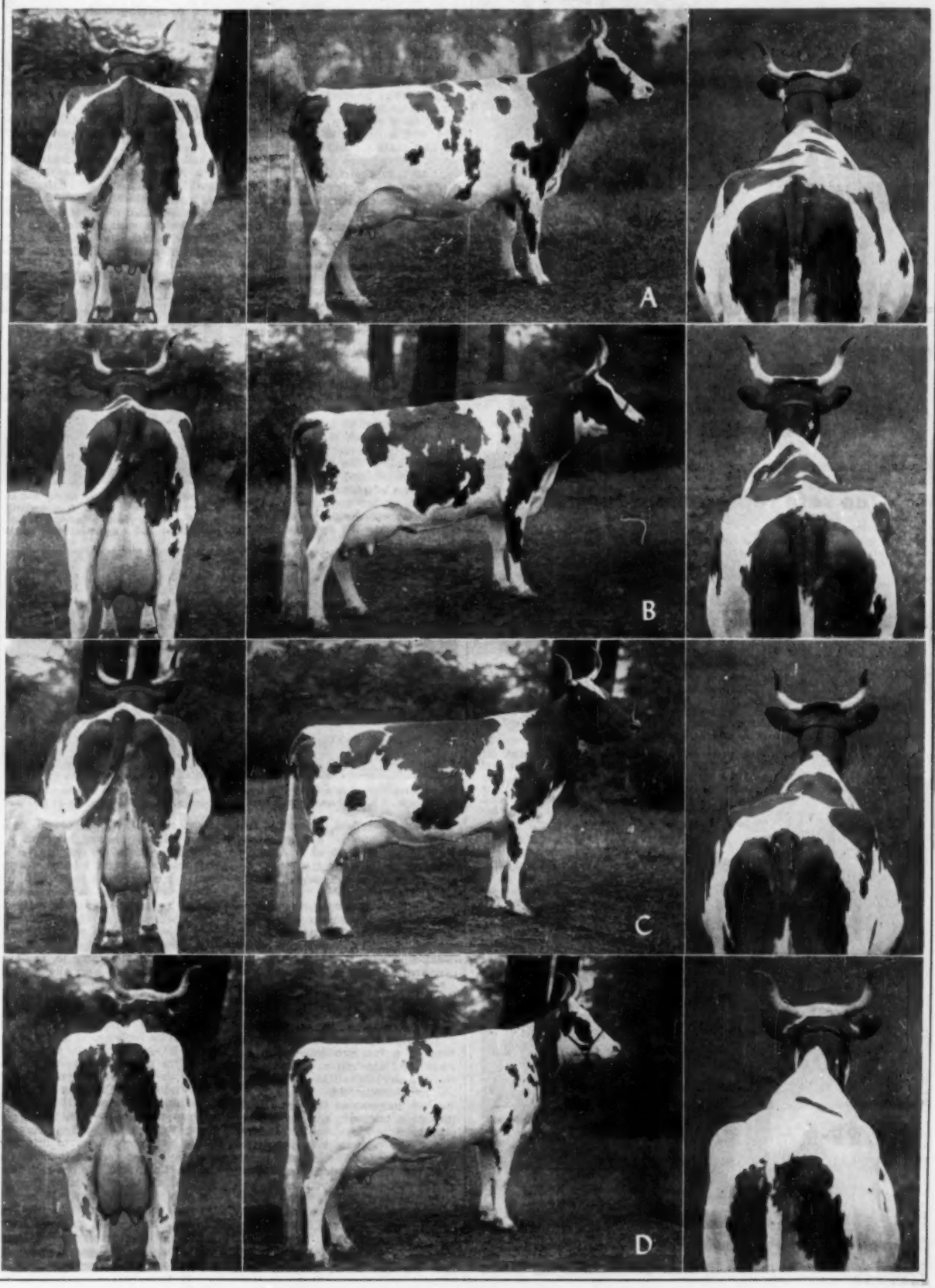

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It's Easy to Add Molasses This Way

A reader writes of a simple method of adding molasses to grass silage without gumming up the cutter and riser pipes.

HOARD'S DAIRYMAN:—On the Beach and Vale Farm in Queen Anne's County, Maryland, we think we have worked out a practical way to add preservative to grass silage.

Our farm manager, Morris Walbert, and I have wanted to ensile our first cutting of alfalfa and some excess May pasture, but we did not want to take the chance of putting it up without a preservative. We had had excellent results in the past with 200 pounds of corn and cob meal to the ton, but we didn't like its cost of some $4 per ton of silage, nor the labor of grinding it. Molasses is reasonable in price, but our friends warned us that it messed up the cutter and the riser pipe, particularly if the stuff was inadvertently allowed to run when no silage was going through. Also, that the cleaning up after use was so great a task that it was not practical to ensile 10 or 20 tons at a time, as we wanted to do during May and June when a half a day or so was available and the material would otherwise be lost.

It seemed to us that all the objections could be met if it were possible to deliver the molasses to the top of the silo and introduce it into the stream of chopped stuff on the silo side of the goose neck. After a bit of experimenting, we devised a rig to do that. We are now feeding the silage made last spring and find it excellent quality and as sweet smelling as the best of corn silage.

The pump is a double-geared device, weighing about 15 pounds. Inlet and outlet are ¾ inch. It is driven by a ½ horsepower motor, belted at 8 to 1, so the pump runs about 230 r.p.m. Pump and motor are mounted on a two-inch plank about 1 x 2 feet, and can be easily carried by one man.

In use, the pump and motor are set on the ground near the cutter. A two-inch rubber delivery hose leads the molasses by gravity from a quick-acting shutoff valve at the tank to a two-inch by ¾-inch reducer, and through a ¾-inch globe valve to the intake side of the pump. On the delivery side, a ¾-inch by one-inch increase at the pump leads through a one-inch, smooth bend of pipe to a one-inch rubber delivery hose. The delivery hose is carried up the outside of the silo and terminates in an eight-inch or 10-inch length of one-inch pipe, capped, and plentifully perforated with ¼-inch holes. This hose is carried up the outside of the silo and into the top, and the perforated terminal is clamped or wired so that it extends into the stream of chopped stuff where it enters the distributor pipe.

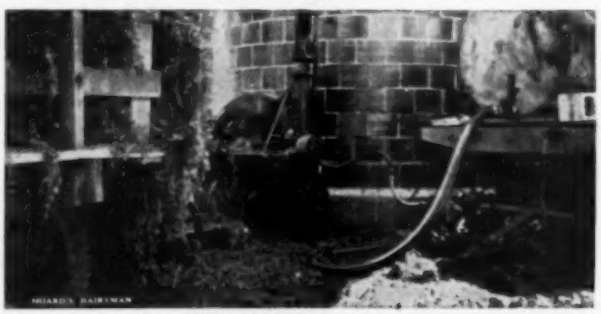
The hoses are attached to the pump and tank with ordinary male and female couplings that can be connected or disconnected by hand. It takes about 10 minutes to assemble the rig, and not much more to disassemble it, clean out the hoses and pump with fresh water, and stow everything away for the next time. The tank and cutter, of course, are allowed to stand in place at the silo until filling is completed.

We keep a spring scale up in the silo and check the delivery every couple of hours by letting the molasses run into a bucket up there for a minute and weighing it. We want 12 pounds per minute, as it requires about eight minutes to unload a ton of green stuff into the cutter. The rate of delivery is controlled by the ¾-inch globe valve on the intake side of the pump. (A gate valve we found was not sensitive enough). With the sizes of hoses that we finally came to, the load on the motor is very light. The silos are 45 feet high and, with the globe valve full open, the delivery would exceed 60 pounds per minute.

The whole operation requires no labor, since molasses is delivered into the 500-gallon tank by tank truck. When the green stuff starts into the cutter the man at the cutter opens the two-inch, quick-acting valve and switches on the motor. If he forgets to stop the motor when nothing is going through the cutter, the molasses simply continues to drip into the silo. If he forgets to close the quick-acting valve, the one-inch hose very slowly empties back through the pump into the tank. When the two-inch hose is removed, a two-inch cap is screwed on in its place so an accidental opening of the quick-acting valve cannot cause trouble.

Pennsylvania. T. H. MOYER.

This pump weighs about 15 pounds and has a ¾-inch inlet and outlet. It is driven by a ½ horsepower motor, belted 8 to 1. Pump runs about 230 revolutions per minute.



The molasses is stored in a 500-gallon tank which has been mounted on an otherwise useless wagon gear. It is filled from a tank truck. Note hose going up silo alongside of riser pipe.

Report on Brucella M Vaccine

Results of West Virginia trials with mucoid vaccine show evidence of promise, but give little reason for enthusiasm.

THE long-awaited report from West Virginia was finally made to the United States Livestock Sanitary Association at its annual meeting in Phoenix, Ariz., late last year. This report had to do with the six-state experiment with Brucella M vaccine. The states of Maryland, New Jersey, Ohio, Pennsylvania, Virginia, and West Virginia initiated an experiment in 1948 where the value of Brucella M vaccine for Bang's disease might be tested under controlled conditions.

As has been reported previously in the columns of Hoard's Dairyman, Brucella M vaccine was developed by Dr. I. Forest Huddleson of Michigan State College. The vaccine is now being widely used throughout the state of Michigan, and on an experimental basis in many other states.

The experiment was originally designed to include three groups of animals, each to contain 20 young, unbred, brucellosis-free heifers. The investigators had trouble getting the heifers in calf, however, so only two groups were used in the experiment. One group of 16 had received vaccine prior to breeding, and another group of 14 were non-vaccinates or control animals.

Previous Results With Strain 19

Now, as to the matter of challenging the animals with artificial exposure. In trials with strain 19, made by the U. S. D. A. Bureau of Animal Industry, one group of heifers was given an exposure dose of 15 million organisms; the second group, 741,000; and a third group, 370,000. Similar exposure dosages were given to non-vaccinated control groups. These exposures in the strain 19 trials resulted in an infection rate in the control groups of 100 per cent, 88.8 per cent, and 77.7 per cent in the high, intermediate, and low exposure doses respectively, whereas the strain 19 vaccinated group showed infection of 72.7 per cent, 22.2 per cent, and 0.0 per cent of the heifers under an exposure dosage similar to that of the controls.

In the West Virginia experiment the challenge was made with one million viable Brucella abortus strain organisms per animal. The challenge was made approximately nine months following mucoid vaccine administration. The majority of the heifers were in the latter half of the sixth month or early part of the seventh month of gestation at the time of experimental exposure.

The heifers were classified as non-reactors or reactors on the basis of blood agglutination tests, made at intervals over a period of 248 days. Those showing consistent titers of complete agglutination at 1 to 100, or higher, dilutions were classed as reactors, and those showing titers consistently lower were classed as non-reactors.

Only Four Animals Failed to React

Using this basis of grading, three of the 16 vaccinated and one of the 14 non-vaccinated animals failed to become infected as a result of their Brucella exposure.

On the basis of the outcome of gestation there were nine normal, three premature, and four abortion calvings in the vaccinated group as compared to four normal, two premature, and six abortion calvings in the control group. The results of recovery of Brucella abortus from material collected at or near the time of calving showed eight positive recoveries from the 16 vaccinates and 10 from the 14 non-vaccinates.

In tabulation of the results of attempted recovery of Brucella abortus from quarter milk samples, collected at intervals following calving, the test was considered positive if Brucella were recovered from either of the quarters sampled. Of the 16 "M" vaccinates, 56.2 per cent had normal calvings, while 14 non-vaccinated had 28.5 per cent normal calvings.

Of the vaccinates, 18.8 per cent showed non-reactor agglutinin titers following their exposure challenge as compared to 7.1 per cent in the control group.

Brucella abortus was recovered from milk samples collected following calving in 100 per cent of each group. On this basis, only two of the 16 vaccinates and one of the 12 non-vaccinates (the results of two heifers omitted, one producing no milk and the other having but a single test), gave consistently positive recoveries in each test. None of the heifers in either group showed consistently negative tests.

Dr. T. C. Green of West Virginia, in reporting to the Livestock Sanitary Association, stated: "The results obtained by either the agglutination tests, the outcome of gestation, or the recovery of Brucella from material collected at parturition, which have been the more common methods formerly used to determine the value of Brucella vaccine, show a noticeable percentage difference between the vaccinated and non-vaccinated groups, the trend being consistently in favor of the vaccinated heifers.

"However, if the recovery of Brucella from the milk in any of the series of post parturition milk collections is considered to indicate infection of the animals, then no protective value can be attributed to the vaccine as used under the conditions of this investigation."

Dr. Green stated in conclusion: "It, therefore, appears that definite conclusion as to the possible value of 'M' vaccine cannot be formulated from the limited data of the present test."

Heifers	Normal gestations	Non-reactors Aggit. test	No Br. ab. recovered at calving	Br. ab. in milk after calving
16—"M" Vac.	(9)—56.2%	(3)—18.8%	(8)—50.0%	(16) —100%
14—Not Vac.	(4)—28.5%	(1)— 7.1%	(4)—28.5%	(12)*—100%

*Two heifers were not included since one failed to lactate and but one milk sample could be obtained from the other.

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By-Products Feed Our Livestock

ALBERT H. MASON

FARMERS who know the value of wheat bran and cottonseed meal as livestock feeds find it hard to believe that only sixty years ago these by-products were thrown into rivers because nobody would buy them. Tankage, meat scraps, and milk by-products, our highly regarded animal protein feeds, were used very little prior to 1900. At that time, corn gluten feed went begging for a market at $6.00 per ton. Wouldn't it have been nice if a few of us could have lived then and have known what we do now about livestock feeding?

The birthday of the commercial feed industry has been established as being sometime during 1895. Growing pains were severe. Farmers made their cows sick by feeding the new feeds in quantities that threw their rations out of balance. They blamed the new feeds for the poor results. It was also probable that some of the early feed manufacturers might have been a little more concerned with profits than with quality of feed. That problem had to be taken care of. In 1906 the Food and Drug Act was passed and animal feeds became subject to federal control when shipped in interstate commerce. The commercial feed industry began to grow.

In the old days, animal feeds were evaluated mostly on the basis of the "total digestible nutrients." This was simply a means of expressing the total amount of energy contained in any given feed or mixture of feeds. By 1925, however, investigators conceded that quality as well as quantity had something to do with livestock feeding results. It was found that protein was not just a simple substance, but a complex compound made up of more than twenty "building stones" called amino acids. They also found that the common home grown farm feeds, many of which contained protein in sufficient quantity, often lacked certain amino acids which were necessary for growth, health, and reproduction. These discoveries were a boon to the feed industry. Many of the by-product feeds contained amino acids lacking in farm grains, especially the cereal grains, and therefore became valuable and in great demand.

Linseed Oil Meal Best Known

It is interesting to trace the development of some of the common by-product feeds that are used as protein supplements to our more common feed grains. One of the oldest and best known is linseed oil meal. Linseed oil meal is made from flaxseed and is a by-product of linseed oil production. In this country, linseed oil is generally made by squeezing the oil out of the flaxseed by what is known as the hydraulic, or so-called "old process." The remaining cake is either ground coarsely to form nut sized linseed cake or is ground finely to form "old process" linseed meal.

Some linseed meal is made by a solvent method, often referred to as the new method, and oil meal made from this method is called new-process linseed oil meal. Most farmers prefer the "old process" meal because they believe it to be more palatable and have a more beneficial laxative effect on livestock. Linseed oil meal usually contains at least 34 per cent protein. However, it contains less protein than either cottonseed meal or soybean oil meal and is more expensive per unit of protein. It does, however, have a conditioning effect on livestock that the other two meals do not possess. As late as 1917 over half of the U. S. output of linseed oil meal was sold in Europe. There is considerable linseed oil meal made from flax produced in Argentina. Oil meal made from this flax is lower in protein than that made from North American flax.

Cottonseed Meal Varies

Cottonseed meal was made in the United States as early as 1885. Early in its history it was used mostly for fertilizer. It started to become popular as a livestock feed around about 1905, and during the early 1940's an average of 1,794,000 tons of this meal was being produced each year in the United States. It is manufactured from the cleaned cottonseed in much the same manner as is linseed oil meal from the flaxseed. Cottonseed meal is sold either as prime quality or as off quality meal. There seems to be more variation in its composition than is generally realized and the guaranteed protein content should be watched by the prospective purchaser. Good quality cottonseed meal should contain about 41 per cent protein.

The vegetable oil industry has contributed several other important feeding meals. Peanut oil meal or cake has gained in popularity during recent years. This is due to the fact that more peanut oil is being produced. Peanut oil meal is very rich in protein. It is often guaranteed to contain 45 per cent protein of a very high quality. It is very palatable to all classes of livestock. Its one drawback is the fact that it becomes rancid if stored too long in warm, moist weather. Coconut oil meal is also produced in this country in limited amounts. It contains less protein than the other oil meals and is fed mostly to dairy cattle.

Soybean Oil Meal Popular

In the early 1920's, oil meal made from "The Magic Bean" or soybean began to become popular in this country. Today it is the most popular source of vegetable protein manufactured in this country. It is used in almost all commercial feeds and farmers find it an excellent and economical protein supplement to their home grown feeds. Soybean oil meal, like linseed oil meal, is commonly made by the hydraulic method and is often guaranteed to contain at least 41 per cent protein. Soybean oil meal is said to contain a very high quality protein and is therefore very desirable for swine and poultry feeds. Well over 3,000,000 tons of this meal are made in this country each year.

Glutens and Malt Sprouts

Your attention has been called to the fact that corn gluten feed was hard to sell at $6.00 per ton when it was first introduced in 1896. By 1900, however, it had found a rather promising market in the new dairy rations that were put on the market at about that time. Gluten feed and gluten meal are by-products of the starch and glucose manufacturing process. It is well to remember that there is considerable difference between the protein content of these two feeds. Gluten feed, which is corn gluten meal and corn bran, usually contains about 25 per cent protein. Corn gluten meal usually has more than 40 per cent protein. Gluten meal is a very heavy feed averaging 80 per cent total digestible nutrients.

Every year thousands of bushels of barley are malted in the manufacture of beer. The residue of this manufacturing process produces two very good by-product feeds—namely malt sprouts and dried brewers grains.

There was a time in the gay nineties when the disposal of these by-products actually cost the brewers money. They first tried to feed the materials themselves by establishing feeding lots near the breweries. The wet grain residues were fed in "slop" form. Later, drying processes were developed and a market was found for the dried product. Distillers and brewers grains as well as malt sprouts are popular supplements in dairy rations. They are medium high in protein and are often cheaper on a unit basis than the various meals.

The meals which are residues from the manufacture of vegetable oils, together with the dried products obtained from the manufacture of liquor and beer, are the by-products used chiefly as vegetable protein supplements to livestock feeds. They do not, however, provide all of the amino acids and poultry and swine require proteins of animal origin in addition to vegetable proteins for best results. Animal proteins are chiefly by-products of the dairy industry, the meat industry, and the fish industry.

95% Tankage Fed

In 1870 by-products from the packing industry were first dried. These

dried products were used primarily for fertilizer. Most of the animal residue, however, was still being dumped into rivers or allowed to decompose in the open air. Some small amounts were fed raw to hogs and chickens. Bone grinders were used to convert raw bones with some meat on them into chicken feed. The poultry industry was first to take advantage of this new source of excellent protein, and by 1900 dried tankage was being used in poultry rations in California. A little later offal from fish canning plants was found to supply a protein product equal to tankage. Because it was plentiful on the west coast, it soon supplanted all other animal protein feeds in that area. The other important packing house by-product that became popular at about the same time was bone meal. Today more than 95 per cent of the tankage produced by the large packers is used for livestock feeding purposes.

We have discussed a number of feeds used essentially as protein supplements. There are, however, some by-product feeds that are not considered as protein feeds. Two of the important ones are molasses and beet pulp.

Molasses for Palatability

Molasses is largely a carbohydrate feed. Southern planters were feeding it to horses and mules before 1900. It does, however, contain B-complex vitamins and minerals. Those elements, rather than the carbohydrate content, were probably responsible for the good health and good condition noted in connection with animals fed this feed in the early days. Today molasses can be purchased either in the liquid or dried form. It is popular because it adds palatability to almost any feed. It is also used extensively in the making of grass silage when a fermentative is necessary.

Beet pulp is a residue from the manufacture of beet sugar. European farmers had been feeding wet beet pulp to cattle for a great many years, but it never became popular in the United States until sometime after 1902, the year that the first dryer was built in Michigan. Today almost all of the beet pulp produced in this country is dried and sold as cattle feed. It is a bulky, palatable feed often fed to cows on test in amounts not in excess of 12 lbs. per day. When used as a substitute for silage or other succulent feeds, it can be soaked before feeding. It absorbs considerable water.

There are many other by-product feeds that can be used to advantage to supplement and substitute for home-grown farm feeds. It is, however, necessary to understand the limitations of these feeds in order to use them to best advantage. Price is always a consideration in determining the advisability of purchasing this or that by-product feed. There is always an opportunity to save considerable, if a wise choice can be made in selecting the by-product feed that is "a buy" at the moment. With this thought in mind, let us consider briefly some more of the by-product feeds that one might have occasion to purchase.

Miscellaneous By-Products

Hominy feed is a by-product from the manufacture of corn meal. It is white or yellow, depending upon whether it has been made from white or yellow corn. It contains the corn germ and the hull of the corn kernel which has been removed in order to make a better looking corn meal. It is practically equal to corn as a cattle feed and is satisfactory as a substitute for a part of the corn in both poultry and swine feeds.

Oat mill feed is a by-product from the manufacture of oatmeal. It is 84 per cent hulls and 16 per cent parts of the oat kernel. Since it is very high in fiber, it is a better substitute for hay than for grains. Fed in limited amounts it is said to be worth about 30 to 40 per cent as much as corn grain.

Feeding oatmeal is not a by-product feed, but oatmeal of poor quality is often sold for feed when it is not usable for human consumption. Oatmeal is commonly too expensive to use except in mixtures for small pigs and calves. Some years ago it was used quite extensively as a feed for baby chicks.

Wheat bran is a by-product from the manufacture of white flour. It consists chiefly of the coarse outer coating of the wheat kernel. It is one of the most popular of the by-product feeds. It is very palatable, bulky, and has a mild laxative effect. It contains more high grade phosphorus than most of the common feeds. Wheat bran is sold in two grades — "Pure Wheat Bran" which contains no screenings and "Standard Wheat Bran" which does contain screenings. Since screenings contain weed seeds, the bran with screenings is not as palatable and there is some danger of introducing weeds on the farm. Wheat bran averages 16.9 per cent protein of a very high quality. It supplies 67.2 per cent digestible nutrients, and is, all things considered, one of the finest by-product feeds for all classes of livestock.

By-products of Wheat

Middlings are also a by-product from the manufacture of flour. "Standard middlings" are the by-product from spring wheat and contain fine particles of germ and bran. A similar by-product from winter wheat is called "red shorts." These two feeds have about the same feeding value. "Wheat red dog" consists chiefly of one of the outer layers of the wheat kernel, together with small quantities of flour and bran. "Wheat flour middlings" is a product made from combining standard middlings and red dog. Standard wheat middlings and wheat shorts can be used to form up to one-third of the concentrate ration of dairy cows. They are among the most popular feeds for swine and are very common and desirable ingredients in most poultry mashes.

"Rye feeds" make up all of the by-products from the manufacture of rye flour. This feed is considerably less palatable than wheat bran and middlings, but can be satisfactorily used as a partial substitute for the wheat products in rations for cattle, sheep and swine.

There are numerous other by-products used for animal feeds, but most of them are important only in the vicinity in which they are produced. Bakery wastes, garbage, fruit and vegetable wastes are really not by-products in the strictest sense, but are important sources of animal feed in the vicinities in which they are found in abundance.

By-product feeds have a tremendous influence on the production ability of American herds and flocks. They will continue to aid the "protein hunger" problem so evident on many farms. It would really be difficult for us to get along without these feeds and we could well use a larger supply—yet only 50 years ago they were being wasted and destroyed.

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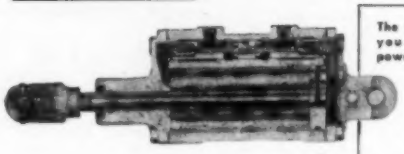

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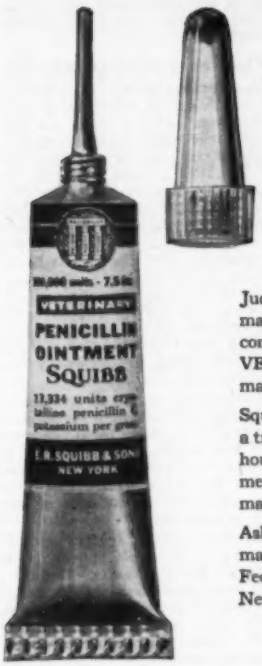

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Senior Division — Open to all 18 years or over.
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Three Family Cash Prizes — $25-$20-$15

To families with all members over 10 years entered — attaining highest average score. Family must include 3 or more members. **Parent must sign name at bottom.**

Use this blank for single or family entries. Colleges, High Schools and 4-H Clubs write for Group Entry Blanks. Special Group Prizes. All entries in groups or families are also eligible for individual prizes. Do not send dupilcate entries.

To qualify for cash prizes, the entry blank, with your complete placings on all five classes, must be mailed to Contest Department, Hoard's Dairyman, Fort Atkinson, Wisconsin, on or before March 17, 1951. Keep a copy of your placings — no entries returned.

Individual entrants must sign name and address at the bottom. Those entrants under 18 years please state age.

The contest is open to everyone except Hoard's Dairyman employees and members of their families.

Family Names	Age	Holstein Placings 1st 2nd 3rd 4th	Score	Ayrshire Placings 1st 2nd 3rd 4th	Score	Jersey Placings 1st 2nd 3rd 4th	Score	Brown Swiss Placings 1st 2nd 3rd 4th	Score	Guernsey Placings 1st 2nd 3rd 4th	Score	Total

Each column headed "Score" and "Total" should be left blank. All entries must be mailed on or before March 17, 1951.

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HOARD'S DAIRYMAN Fort Atkinson, Wis.

PREVENTING SCOURS IN CALVES

(Continued from page 67)

tively practiced when the events that lead to it are more fully appreciated. Essentially we are dealing with two opposing factors. The first one is the calf, or more specifically its resistive bodies, the functions of which are to protect the calf from unfavorable influences. The unfavorable influences are known as the causes and predisposing causes of disease and disorder, reference to which has already been made. The dairyman then is concerned with development of strong, vigorous calves through good feeding and care, and by eliminating or holding in check the forces that desire to destroy the calf. With this in mind, let us discuss briefly some of the more important items that tend to keep a calf healthy.

Feed Expectant Mothers Well

It has been observed that the nutrition of the dam during the gestation period has definite influence upon the welfare of the calf at birth. It is also true that the development of the unborn calf is accomplished at the expense of the dam when there is a marked deficiency of the diet. Such conditions undoubtedly are rare, but they do exist, particularly following long periods of drought or where cows have little or no access to green, leafy roughage or pasture.

A shortage of iodine in the dam's diet, for example, disturbs the normal function of the thyroid gland and produces defects in the calf, including marked retarding of physical and mental development. Another example of a dietary deficiency that influences the welfare of the calf is prolonged feeding of roughages and concentrates that are devoid of carotene. Such deficiencies produce some detrimental tissue changes in the cow, and abortions and weak calves at birth have been observed. Cows so fed produce colostrum and milk containing little or no carotene or vitamin A. A generous supply of vitamin A is essential for young calves. It is supplied by the colostrum or through the use of vitamin concentrates.

Intra-Uterine Infection

Another important condition affecting the calf before it is dropped and having a direct bearing upon its health after birth is a disease condition in the gravid uterus called pre-natal infection. The condition is also termed intra-uterine infection, and when present, it usually results in calves that are weak or sick at birth; occasionally one is born with an inflammation of the navel. In herds where the birth of such calves is frequent, losses among the newborn is heavy, for the raising of these calves is difficult. This condition is often present in herds where sterility and breeding diseases are prevalent. The dams often have retained placentas and septic metritis. The calves themselves are frequently covered at birth with yellow feces arising from fetal diarrhea.

Good Care and Good Growth

Much of the calf's success during the early period will depend upon the feed and care it receives. The young calf has relatively few resistive powers, hence extra good care is required at this critical stage. For the safety and protection of the mother and the calf, a roomy, clean, well bedded box stall should be provided at freshening.

A protected outside individual paddock is also recommended when weather conditions are suitable. A tree or group of trees, or an inexpensive lean-to may serve the purpose as well as a more pretentious shelter. If the hind parts and the udder are not clean, it isn't a waste of effort to first wash the parts with soap and water and then dry with a towel or other suitable material before calving.

It is good routine practice to swab the navel of the newborn calf with tincture of iodine or some other suitable antiseptic. The practice may prevent a serious case of navel infection at some future time.

Is Colostrum Milk Necessary?

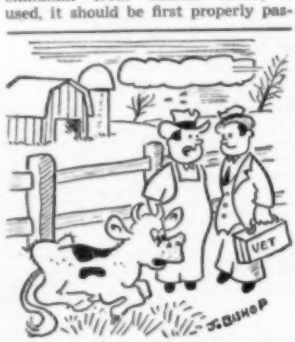
Is it necessary that the calf receive the dam's first milk? It may not be necessary where calves are dropped and raised under practically ideal conditions, but it is nevertheless a highly recommended practice. Colostrum is very rich in globulins (proteins) and antibodies or disease resisting bodies, and variable amounts of vitamin A depending upon the dam's diet. In some species these protective bodies are transmitted from the mother to the young through the placenta before birth. This does not occur in bovines, and if colostrum is withheld, the newborn calf is practically unprotected.

Early administration of protective serums and vitamin concentrates are often indicated as substitutes or for the purpose of providing additional protection. The fact remains, however, that colostrum, particularly colostrum from well-fed cows, is the most natural and practical means of providing valuable resistance to the newborn calf. As the calf grows older, its resistive mechanisms are increased. When necessary or advisable these are often fortified with vaccines, bacterin, or serums for specific conditions.

Feed the Calf Well

Resistive powers are also enhanced through good feeding after the first few days (colostrum period) by supplying sufficient quantities of nutrients, vitamins, and minerals. Since the text of this article deals largely with the causes and prevention of scours in calves, a lengthy discussion on feeding will not be attempted.

If calves are pail-fed, fewer digestive upsets may be expected if the pail is held about two feet off the floor so the calf's neck is partly stretched forward instead of downward while drinking. Nipple pails are very satisfactory and preferred by many calf feeders. If milk or skimmilk from outside farms is used, it should be first properly pasteurized. Utensils should always be thoroughly washed and sterilized. Feed mangers and drinking cups should be kept clean. Grain allowed to accumulate often becomes wet and fermentation takes place. The calves usually refuse to eat spoiled or partially spoiled food, but if they do a digestive upset and scouring may follow.



". . . And I thought maybe one of her stomachs might be actin' up again."

May Need Harmless Bacteria

More evidence is accumulating that calves raised in separate pens or away from older animals are deficient in so-called harmless bacteria that aid in preparing the contents of the rumen (first stomach) for digestion. Experiments show that such calves do not grow as well or appear as thrifty as those that have been inoculated. A practical way of providing such bacteria is by obtaining a cud from a healthy adult and transferring it to the calf that is ready to handle roughage and concentrates which usually is from 3 to 6 weeks of age. Calves raised on nurse cows are generally well supplied with the bacteria.

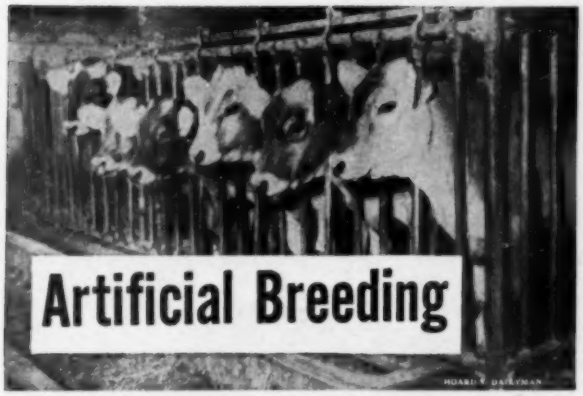
Overfeeding should be avoided always. If too much milk or skimmilk has been fed, reduce by at least one-half or eliminate the milk from the diet for a feed or two and then take a few days to bring the calf up to full feed. Medication may or may not be necessary.

In controlling scours, suitable housing is as important as proper feeding and sanitation. Besides a dry comfortable bed, the barn must be free of drafts and excess moisture. Cold, damp, poorly ventilated barns foment colds and other respiratory infections. These in turn induce scouring. Fresh air, sunshine, and moderate exercise are excellent aids to robust health. Provision for controlling flies should not be neglected. Flies not only carry infection, but in larger numbers they irritate the calves to such an extent that much of the energy intended for building muscle and bone is used in fighting flies.

Summary

The job of raising calves is one of the most important on the dairy farm. If a calf is worth raising, it is worth raising well. Selection, good care and feeding, and prompt treatment of the sick will result in a lowered mortality, fewer setbacks, and more economical growth. When disease sets in and digestive disturbances occur, reduce the feed, make the calf comfortable, isolate if possible, and obtain professional council. If treatment is indicated, follow the advice of your veterinarian. The case may be simple or it may be complicated. Proper treatment cannot be instituted intelligently without a careful diagnosis. A correct diagnosis is often the difference between success and failure. Your veterinarian is best qualified to advise both on prevention and treatment. Scouring may be a simple symptom or it may be a signal warning of an impending serious infection. The high mortality reported by the United States Department of Agriculture can be substantially reduced if all of us concerned become a little more alert to the problem of raising healthy, economical replacements.

Those who try to fleece others are often shorn themselves.



Reproductive Organs of a Cow

THE growth of artificial breeding has brought with it many comparatively new terms and names. For those who are not familiar with the reproductive organs of a cow, or who are not certain what terms best describe various parts of the organs, we present below a brief summary, taken from a University of Nebraska publication prepared under the authorship of C. W. Nibler, extension dairyman:

The diagram of the reproductive organs shows the different parts and their relative position in a non-pregnant cow. For clarification the following explanation as to the functions of the parts is offered:

Vulva—The external opening of the reproductive tract.

Clitoris—The female sensory and erectile organ.

Vestibule and Vagina—These two are generally considered only as the vagina. An imaginary line separates them, which is the rudiments of a sphincter muscle. The length of the vagina and vestibule varies with the size and age of the animal. However, the total length is generally 12 to 16 inches.

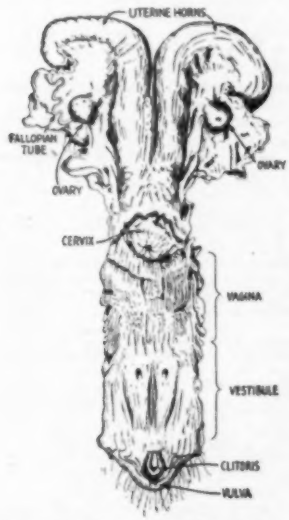
In natural mating, semen is deposited in the upper end of the vagina at the entrance to the cervix.

Cervix—The opening into the body of the uterus. In the normal cow the cervix opens slightly during heat so that the inseminating tube can be passed through into the uterus. Between heat periods the opening of the cervix contracts, and if pregnancy follows breeding, it becomes sealed by a gelatinous plug.

Uterine Horns—The uterus consists of its body and the right and left uterine horns. The internal surfaces are supplied with glands which produce a fluid secretion. Through this the sperm travels to the egg or ova. After fertilization of the egg the fetus (unborn calf) develops within some part of the uterus. By cotyledons, the fetal membranes (placenta) are attached to the uterus. This attachment provides nourishment from the cow for the developing young.

Fallopian Tube—There are two Fallopian tubes, also called oviducts, through which the egg passes from the ovaries to the uterine horns. The ends nearest the ovaries are funnel shaped and, at the time of ovulation, surround the ovaries. Generally the sperm reaches the egg and unites with it in the Fallopian tube. The fertilized egg then passes into the uterus.

Ovary—Two ovaries are connected to the back of the female inside the main body cavity. Normally every 19 to 21 days the follicle, which develops within the ovary, erupts and the egg drops into the funnel-shaped opening of the Fallopian tube. During pregnancy, a corpus luteum develops in place of the follicle in the ovary and prevents occurrence of heat.



Reproductive organs of a cow, showing cutaway view of the vagina and vestibule.

Wheat Germ Oil No Cure for Sterility

A study was made of the effect of feeding wheat germ oil to dairy cows that apparently were partially sterile. The oil was fed according to the manufacturer's instructions for 90 days, but the treated cows had no better conception record than similar cows which did not receive the oil.

Two lots were made of 32 cows whose records indicated they were "slow breeders." Wheat germ oil was fed to one lot. Of the 16 cows receiving the oil, 7 conceived within the 90 days, 2 conceived within an additional 60 days, and the other 7 cows were sold after failure to get with calf. Twelve of the control lot conceived during the 90-day experimental period; the other 4 were sold as non-breeders. The 32 cows were bred an average of 4 times.

It is believed that the conceptions which occurred in both lots were due to natural recovery and cannot be credited to the treatment with wheat germ oil.—Agricultural Research in Texas, 1947-49.

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CALLING ALL JUDGES

Here's your chance to compare your judging ability with that of other readers from all over the world. The Ayrshire class will be found on page 91 and there are three more interesting classes to follow.

Compact working areas are lifesavers. This laundry room features a twin-bowl laundry tray and automatic water heater. In building or remodeling homes, plan for plumbing.

The boiler in this basement laundry room heats the domestic water and creates no muss. The laundry tub has storage space below. The plan was worked out before installation.

Dairy Farm Home

Carefully Plan Kitchens and Laundries

A well planned kitchen takes the drudgery out of cooking. Careful planning reduces steps from 500 to 50 in preparing one meal.

IT TAKES a heap of living to make a house a home, according to Edgar Guest, and it takes a heap of planning to make a kitchen and laundry room sound parts of that home.

Taking the kitchen first, let's see what it should be and do. A well planned kitchen should be:

1. Efficient.
2. Beautiful.
3. Easy to maintain and clean.

A well planned kitchen should:

1. Save time and steps before, during, and after mealtimes.
2. Have modern equipment.
3. "Clean" easily.

You can have all these things if you sit down and work out a sensible arrangement of equipment; then buy equipment that is made by reputable manufacturers.

An efficient kitchen consists of three areas of activity: (1) receiving and storing food; (2) preparation and cleaning; (3) cooking and serving. The ideal layout places the storage area close to the door where deliveries are made. Adjacent are the sink and counter area ready to perform their duties in preparation.

Proper Arrangement Reduces Steps

The range and a counter table for garnishing or serving are logically placed close to the dining room door. Such a simple arrangement not only means time saved, but energy conserved as well. In 1916 the average housewife walked almost half a city block, 105 steps, to make an apple pie. Today in a well-planned kitchen she can finish the pie and not walk more than the distance to the front door, about 22 steps.

In preparing an entire meal, the housewife in an old-fashioned kitchen walked from 300 to 500 steps, while a meal can be prepared now by walking about 50 steps. Steps saved mean more time for other things.

The kitchen sink is the axis around which all work moves because water is needed for preparing food, dishwashing, and cooking. The sink center, therefore, needs a central location between the stove and mixing centers.

Double sinks are slightly more expensive than single sinks but are far more convenient. Unless you have an extremely small kitchen, a double-bowl sink is recommended. Some double-bowl sinks have one deep bowl and one shallow one. Others have tops that slide from one side of the sink to the other as needed, to give an additional flat working surface and help keep your kitchen looking neat.

Don't leave the triangular sink strainer full after meals. Vegetable juices often contain acids which will stain the enameled sink surface. Empty the strainer and clean it as soon as you have finished using it.

Plan for Other Appliances

If you plan to add an electric garbage disposer and dishwasher in the future, you will save money by having the necessary wiring and plumbing built in in advance.

The sink should be placed under a large window for adequate light. It also helps mothers keep an eye on small children playing in the back yard. Don't neglect artificial lighting above the sink either—you'll be washing dishes after dark throughout the winter.

When buying steel kitchen cabinets, look for the seal of the Steel Kitchen Cabinet Institute. This seal means the cabinet has been thoroughly tested by a private laboratory not connected with any single manufacturer and that the cabinet has successfully passed all 21 laboratory tests, conforming to definite standards of quality. These standards include certain gauge, construction, rigidity, and performance requirements, as well as 10 finish tests.

Cabinet body, welding, doors and drawers, exposed surfaces — all are subject to rigid tests designed to give buyers positive assurance that steel kitchen cabinets will provide dependable service for years to come.

Kitchens may be L-shape, U-shape, corridor type, or even placed along one wall. A U-shape kitchen may be the best type for a large family, whereas a smaller family might have greater convenience in an L-shape arrangement.

Studies show that the average homemaker walks more than 3,000 miles every year doing housework, washes 26,270 dishes, and, for the course of her life, spends 9½ years cooking more than 57,000 meals for a family of four.

For these reasons, a convenient kitchen should take a high priority in home improvement plans.

The Laundry or Utility Room

The laundry room, or utility room, or laundry-utility room, however you want to call it, requires four work centers — preparation, where you sort the clothes and remove the stains; washing; drying; and ironing.

Arrange the sorting table, washer, dryer, and possibly the water heater along one of the narrow walls. Opposite these have the ironer and

Use	Water Required
Bathtub (adult)	7 to 10 gallons
Bathtub (baby)	3 gallons
Shower	7 gallons
Shower needle (multiple spray)	24 gallons
Dishwashing (per person per meal)	½ gallon
Laundry:	
Standard washer — 6 sheet machine	14 gallons
Standard washer — 8 sheet machine	16 gallons
Each hot rinse	8 gallons
Automatic washer (each load)	15 gallons
Miscellaneous cleaning (per day)	5 gallons
Personal toilets (per person per day)	2 gallons

The temperatures in the following chart have been carefully checked and are considered appropriate for these tasks:

Use	Temperatures (deg. F)
Dishwashing:	
Automatic	140—160
Hand washing	110—115
Household Cleaning	140—160
Bath	95—115
Laundry:	
Silks	90—105
Woolens	90—105
Cottons	
Fast colors	120—160
Others	105—120

Before: Kitchen shows antiquated sink with its tiny drainboard and its outmoded lines. It also lacks cabinet space.

After: Steel cabinets holding supplies and new single-bowl sink with flanking counter space add beauty to kitchen.

Sprucing up the kitchen and getting more room for storage can be done simultaneously. This new sink is pastel blue and has undersink space for supplies. Colored sinks liven up kitchens. Popular colors are blue, green, and yellow.

by William W. Brooks

base cabinets, which may be backed up by a snack bar to divide the kitchen from the laundry.

Have open shelves, or cabinets to match those in the kitchen, above the ironer, to readily accommodate finished clothes. Near the ironer have the ironing board which folds into the wall or slides into a slot out of the way.

Automatic washing machines for clothes and dishes call for a lot of hot water, so make sure your automatic water heater is adequately sized.

Different homes, of course, use varying amounts of hot water. The accompanying table gives what are considered average figures.

There are gas-fired water heaters, oil-fired water heaters, and electric water heaters. Gas-fired water heaters are in most common use.

Laundry tubs are also utility room items which should not be overlooked. Washing machines will do all the light work satisfactorily, but any heavy washing will go better in a laundry tub. New models have built-in washboards, swinging spouts, and rounded corners for easy cleaning. One manufacturer, for example, offers twin-bowl laundry tubs in two sizes, 36 x 25 inches and 42 x 25 inches, with both basins 12 inches deep, and a single bowl tub measuring 22 inches wide, 12 inches deep, and 25 inches from front to back.

Short pipe runs from the automatic water heater to the kitchen and laundry room are good economy. Long pipe runs mean that more fuel is used up to supply more hot water. Both fuel and hot water are thus wasted.

If the domestic water is heated indirectly, that is, by the same boiler that heats the home, you don't have to worry about buying a separate water heater. Pipe runs from the indirect water heater should, however, be as short as possible.

One final word: look over the latest in kitchen sinks, steel cabinets, laundry tubs, and automatic water heaters at your plumber's store. He not only carries the latest lines available for home use, but will have helpful literature and tips of his own to reduce your building or remodeling costs.

THE END.

The sink is the heart of the kitchen. This arrangement features a twin-bowl sink and adjoining counter space with a breakfast nook at the far end. Don't put hot pans on the sink's enameled surface or it will damage the lustrous finish.

2144. There's nothing like a smart print dress with an attractive, fitted bolero to finish this season and herald the next. Sizes 12-20, 36-46. Size 18, 5½ yds. 39-in.

2108. Going South, sewing early? Then you will want this capped sleeve shirtwaist with slimming bands of eyelet trim. Sizes 12-20, 36-42. Size 18, 3⅞ yds. 35-in.; 5½ yds. trim.

2113. The square-cut and collared neckline forms the focal point of this day or date dress. Fitted bodice, gracefully gored skirt. Sizes 10-20. Size 16, 3⅝ yds. 39-in. fabric.

2007. The scalloped collar and matching bag make any outfit lovelier, more complete. One size, adaptable headsize. ⅝ yd. 35-in.

2080. Either way you make it, daughter will love the pert styling of this dust ruffled dress. Sizes 2-10. Size 4, 1⅞ yds. 35-in.; ⅝ yd. 12-in. contrast, 1½ yds. ruffling.

3053. Good news! An extra smart soft shouldered shirtwaist that is simple enough for even a beginning sewer to make! It's in sizes 10-20, 36-40. Size 16, 2⅞ yds. 35-in. fabric.

3506. Two skirts to supplement your wardrobe. Waist sizes 24-34. Size 28, with take pocket flaps, 1½ yds. 54-in.; with saddle stitched side pockets, 2½ yds. 35-in. fabric.

2149. Sew early for Easter and start by making this adorable outfit for daughter. Sizes 6 mos., 1, 2, 3, 4, 6. Size 2 cape, 1⅝ yds. 35-in. dress, 1½ yds. 35-in.; ¼ yd. 27-in. contrast.

2850. If you like slim, trim lines for homework, you will really enjoy this princess style frock softened by scallops. Sizes 12-20, 36-46. Size 18, 4¼ yds. 35-in.; 2¾ yds. binding.

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Clean Clothes Give Confidence

Few things contribute so much to self-confidence and poise as knowing that our clothes are all right. This is more than a matter of being fashion-right. If hems are even and not ripped, all buttons snug, and everything spotless, we can feel well turned out in a costume that's three or four years old.

So if you must buy new school clothes this year, choose them with an eye for washability — yes, even woolens. And that means more than sweaters. The matching wool skirts which we all love can be washed as easily as the sweaters. Just swish them in lukewarm thick suds. Remember, no rubbing — that's what mats wool and makes it harsh. Be sure you use lukewarm water for the three rinses, too, for cold water will shrink wool just as much as hot water will — the delicate fibres literally shrink away from extremes in temperature, just as we do!

You know of course about squeezing, instead of wringing, to remove water; and the familiar trick of blotting up excess moisture with a bath towel is a wise procedure. Use a medium iron, and a pressing cloth to prevent a shine. And hang up to finish the last bit of drying. You know, one is not supposed to iron wool bone-dry . . . letting the last tiny bit of moisture evaporate gives that professional soft finish, prevents stiffness.

Corduroy a Practical Fabric

Corduroy is a fabric which washes beautifully with care. Don't wait too long to wash dark colored garments. Brush well before laundering. And do be sure to wash separately — not only because the color may run just a little, but because lint clings to corduroy, and is very difficult to get off if it has dried on through laundering. Be sure to empty pockets—a piece of cleansing tissue forgotten in a pocket can spoil all your efforts. Because this fabric is bulky, you'll probably need to wash it in a second fresh suds for best results. Use the same lukewarm, towel, and shade drying treatment you give wool. Corduroy needs a bit of brushing while it dries, to bring up its velvety nap. Do be sure, with either corduroy or wool, to hang garments in such a way that they are well spread out with no creases or folds, for this may defeat all your care about temperature and make streaks where the water has run down. You'll find a light smoothing over with an iron on the wrong side and a final brushing is all the finishing treatment corduroy needs.—Cleanliness Training.

Uneven Cakes

If your cakes come out of the oven higher on one side than the other, check the oven grate, the pan, or the temperature of the oven.

Miss Frances Cook, foods and nutrition specialist, University of Illinois College of Agriculture, says any one of the following may cause uneven cakes: The oven grate may not be level, the pan may be warped, the batter may have been spread unevenly in the pan, the oven temperature may have been uneven, or the pan may have been too near the edge of the oven.

. . HANDY HINT . .

PEEL ONIONS WITHOUT CRYING

When peeling or grating onions, I always hold an unburned match between my teeth. I never have to cry when I do this.

Wisconsin. MRS. E. J. MEYER.

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the Soup Kettle

by Marian Pike

Rich, savory soups steaming in the kettle whet the appetites of the whole family and provide them with good nutrition, too.

Almond cream soup may be new to your family but it is deserving of a trial.

IF A well filled soup kettle is a tradition at your house, you know how easy a soup meal is for the cook and how good it is for the family from the standpoint of nutrition as well as plain good eating.

Soups fall generally into two classifications, those which are highly flavored and very liquid which are used at the first of a meal to stimulate appetite, and those which are thick, rich meals in themselves. Since soup meat and bones are relatively expensive and fuel costs must be counted, most of us no longer go through the tedious process of making our own stock, but are content with the excellent commercial bouillon cubes and canned consomme and bouillon. When we make soup, we usually make the easier to prepare meal-type soups instead of the delicate, clear appetizers. We use cream soups often because they are an easy way to add that important milk to our diets.

More and more families nowadays are using soups winter and summer. On hot days a small serving of tasty hot soup is very appealing with cold salads and cold cuts. On cold days when appetites are really awakened, no food in the world is more cheering than a steaming bowl of soup.

Below are listed six soup recipes. Some of them will be old familiars to you. The almond cream soup, which is pictured above (through courtesy of the National Dairy Council), is deserving of a place in your roster of old favorites. Its delicate nutty flavor is pleasing. With a crisp relish plate, slices of toasted French bread which has been sprinkled with grated cheese and broiled until the cheese melts, and with cookies and sauce for dessert, this soup makes a meal the family will thoroughly enjoy.

The crabmeat bisque is really a party dish. Richer and thicker than a true soup, it is a meal in itself and needs little else with it. It is fairly expensive, but it is really of an exotic flavor with the delicate combinations of the various soups and the crabmeat. Don't be afraid to try it. Even the men like it at our house.

I had been making cream of tomato soup as delicately as I could for years, straining it painstakingly, and my family had not been particularly impressed. Then once when I was in a hurry, I tried it with the whole tomatoes, as per recipe below. My husband's face lit up and he said, "Ah, this is what Mother used to make!" Since that we've never served any other kind of tomato cream as we all prefer this type. It has more character.

The oyster stew is nothing new. But it is rich. And that is the secret to making oysters good. Utterly without fat themselves, they need to be smothered in butter and cream. If you are reducing, stay away from oysters because to be good, they must be dripping with added richness.

The soup of the day is really a chowder, a meal alone. It may be made in your pressure sauce pan if you prefer. For the first group of ingredients, bring the pressure to five pounds and cook for 10 minutes, letting the pressure descend then of its own accord. Add the potatoes and pressure at five pounds again for three minutes, again letting pressure go down by itself. Stir in the left-over vegetables, heat thoroughly but do not pressure again.

Everyone has her favorite way of making French onion soup. The recipe given is pretty much standard, but it is included to remind you of this very tasty and healthful dish. A small amount serves as a fine appetizer—a larger quantity provides the main course for your meal.

Soup as the main dish can be a little monotonous because it goes down easily. Provide, as a contrast, a variety of crisp relishes so you have something to chew on. Don't get in a rut and serve just plain crackers with every soup. There is a wealth of different types of commercial crackers to choose from—and in addition, good crusty bread, toasted bread cubes, croutons, rye wafers, Melba toast, bite-sized cereal or popcorn are delicious with soups.

ALMOND CREAM SOUP
(Different, but good)

Melt 3 tablespoons butter in saucepan
Add:
- 1 cup finely diced celery
- ½ cup finely diced onion.

Cook over low heat until tender.
Blend in:
- 4 tablespoons flour
- 2 teaspoons salt*
- ⅛ teaspoon pepper
- ½ teaspoon condiment sauce.

Stir in:
- 4 cups milk.

Cook over low heat until smooth and thickened.
Add:
- 2 chicken bouillon cubes.

Stir until cubes are dissolved.
Fold in:
- ½ cup blanched, chopped almonds.

* (If salted, toasted almonds are used, use only one teaspoon salt.)
Turn into hot soup bowls and sprinkle with slivered, toasted almonds.
Serves 6.

CRABMEAT BISQUE SOUP
(Easy, quick, unusual)

Mix together in top of double boiler:
- 1 10½ or 11 oz. can cream of mushroom soup
- 1 10½ or 11 oz. can cream of asparagus soup
- 1 10½ or 11 oz. can cream of tomato soup
- 1 6½ or 7 oz. can drained crab meat
- 1½ cups light cream.

Season to taste.
Heat thoroughly over simmering water.
Serves 4 to 6.

WHOLE TOMATO CREAM SOUP
(Nutritious and delicious)

Melt ¼ cup butter in saucepan
Add:
- 1 cup finely diced celery
- ¼ cup finely diced onion.

Cook over low heat until tender.
Blend in:
- ¼ cup flour
- 2 teaspoons salt
- ⅛ teaspoon pepper
- 1 teaspoon sugar.

Stir in 2½ cups milk
Cook over low heat, stirring until very thick.
Heat 2 cups canned whole tomatoes
Just before serving, slowly fold heated tomatoes into hot cream sauce, stirring as gently as possible.
Serve at once without reheating. Serves 6.

RICH OYSTER STEW
(It's better with butter)

Heat together until edges of oysters curl:
- 1 pint oysters
- ½ cup butter
- ½ teaspoon salt
- ⅛ teaspoon pepper.

Mix together and heat just to boiling:
- 1 pint light cream
- 1 quart whole milk.

Add hot milk and cream to oysters.
Heat to scalding, stirring frequently.
Serve at once in hot bowls.
Sprinkle with paprika.
Serves 6.

SOUP OF THE DAY
(A tasty way to clear out the refrigerator)

Brown ½ lb. ground beef, adding fat if needed.
Combine meat in large kettle with:
- 2 cups canned tomatoes
- ½ cup diced celery
- ½ cup diced carrots
- ¼ cup diced onion
- ½ cup pearl barley
- 2 teaspoons salt*
- 1 teaspoon sugar.
- 1½ quarts left-over vegetable juices or water.

Simmer slowly for 1 hour.
Add 2 cups cubed potatoes, simmering another hour.
About 15 minutes before serving, add 1 to 2 cups of left-over vegetables such as corn, peas, lima beans, green beans, etc. Serves 6 generously.
* Use less salt if left-over vegetables and liquids have been highly seasoned.

FRENCH ONION SOUP
(It whets the appetite)

Heat to boiling 4 cups water.
Drop in 4 beef or chicken bouillon cubes.
Stir until dissolved.
Reduce heat and add:
- 2 cups finely chopped onion
- 4 tablespoons butter.

Simmer until onion is tender.
Place toasted bread cubes or circles in heated bowls. Pour soup over. Sprinkle with grated cheese and serve at once. Serves 6.

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Poultry Problems

H. H. ALP

The New Year

The year 1951 should be a very interesting year for the farm flock poultryman, for unquestionably folks are going to have to make up their minds to adapt their poultry operations to the demands of the modern day consumer.

Recently we received a letter in which this question was asked, "How can we present a convincing case to the farm flock owner and make it stick? And what's to be done about the thousands of flock owners who say, 'Nuts.' We've always had a flock this size on the place and we're going to keep on."

The answer to this question is very easy and a very simple one for the consumer has already made the decision. They are asking for quality both in eggs and poultry, and they are wanting their poultry meat ready for the oven, and all this means that the poultry producer who plans to cater to the demands of the 1951 consumer needs to get on the quality production program.

With no price supports for current receipt eggs, there is going to be a tough market outlook for this type of production. Our market demands will take care of some current receipts but a very limited quantity, and there is no justification for encouragement for the producer who is not making plans to produce other than current receipts.

One problem the poultry industry faces in the new year is that of finding a market for about a dozen and a half eggs. What we mean is, that on a per capita basis the government last year purchased about this many eggs and since they will not be in the market this year the industry will need to take up the slack. The problem shouldn't be too difficult, for in the first place part of these eggs will probably disappear from the market because of some marginal producers quitting, and because we are producing more eggs of higher quality and getting them to market faster in more attractive packages. More and more of them are being merchandised under refrigeration which will mean more people eating more eggs.

How Often Are You Culling?

Efficiency of production becomes increasingly important and for this reason continual culling is advisable.

Experimental work conducted by the University of Illinois shows that it requires 57 lbs. feed to maintain body weight of a 4-lb. bird, 65 lbs. for a 5-lb. bird, 75 lbs. for a 6-lb. bird, and 81 and 89 lbs. for 7- and 8-lb. birds. This means, for example, that a 6-lb. bird laying at the rate of 250 eggs per year consumes approximately the same amount of feed to produce a dozen eggs as the 4-lb. bird laying at the rate of 200 eggs a year. In other words, feed efficiency greatly increases with the increased rate of lay, and it should be remembered that for every bird not laying, feed consumption drops but little. A bird with zero production weighing 6 pounds would eat 73 pounds of feeds just to maintain herself. This makes a good argument for getting the non-layer off feed as quickly as possible.

Another important reason for constant culling is the one of health. Mortality can be kept to a minimum through culling and severe losses avoided as a result. Frequently we see flocks at this time of the year which show about 20 per cent of the birds being more or less out of production, and there is little excuse for keeping them around on the basis of hope.

Do You Sell Eggs?

This sounds like a crazy question but there is a good reason for asking it. We have already mentioned the fact we have about a dozen and a half more eggs to sell per person this year than we had last, and we wonder how seriously poultry producers themselves are accepting this challenge. How many times do you ask your friends, "Did you have two eggs for breakfast this morning?" How many times do you talk with your storekeeper about merchandising your eggs attractively, or have you ever told this story?

Egg Facts by the Dozen

"There's More Than Flavor In Their Favor."

Eggs are an excellent source of proteins. They contain the eight essential amino acids.

Eggs are rich in essential vitamins: A, B_1, B_2, D — necessary for good health.

Eggs contain several necessary minerals: Iron, phosphorus, calcium.

Eggs are low in calories. Only 79 in average size egg—kind to waistline.

Eggs are a natural protective food, one of the basic seven required daily.

Eggs contain body-building materials needed for convalescents and the undernourished.

Eggs are delicious as well as nutritious for the whole family.

Eggs are a bargain food package —economical, versatile, convenient.

Eggs are an excellent supplemental food. They make good the nutritional deficiency in other foods.

Eggs are easily digested. Their health-giving nutrients are readily available.

Eggs are shell protected by Nature; a food untouched by hand from farm to home.

Eggs make other foods more attractive. They enhance food value.

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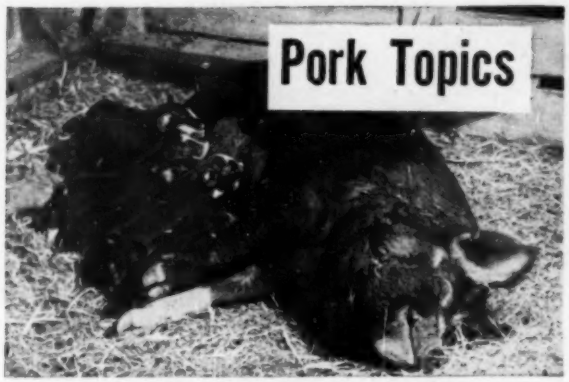

Questions Facing Hog Raisers

J. J. LACEY

What are tankage or meat scraps worth per ton when fed to hogs? Can they be used in place of each other?

To answer the second question first, digester tankage and meat scraps are interchangeable when fed in ordinary home prepared hog feeds. Although tankage carries somewhat more protein than meat scraps, the latter product is higher in mineral content and in feeding trials has been worth as much as tankage, pound for pound, as a supplement for grain.

In reply to the first question, to give a dollar and cents value per ton for either of the products can be done only when their value to replace grains can be determined. Both are protein supplements and both will save grain if fed in proper proportions in rations. The amounts of grain saved by their addition and the prices of grains fed, establish the values of these animal by-products.

Here is one method of arriving at a value per ton:

Corn is selling at about $3.00 per hundred at the present time. If corn alone is fed to hogs, about 600 lbs. of it will be needed for 100 lbs. gain on a feeder hog. This would, at $3.00 per hundred for the corn, make the gain cost $18.00 per hundred (600x3.00). In contrast, when corn is balanced by means of an animal protein, about 400 lbs. corn and 40 lbs. tankage or meat scraps will produce 100 lbs. of pork. To follow this calculation, the 40 lbs. tankage or meat scraps have replaced 200 lbs. of corn, or have lowered the corn cost from $18.00 to $12.00 (400x $3.00) for each 100 lbs. grain. Therefore, the 40 lbs. tankage or meat scraps are worth $6.00 ($18.00-$12.00). If 40 lbs. are worth $6.00, each pound is worth 15c, or each 100 lbs. worth $15.00. One ton would be worth 20 times as much, or $300 for a ton of either of these animal product supplements. Their values might be lower if there is a chance to use grains other than corn, or if plenty of green feed is available.

I have heard it said that 4 pigs out of 10 farrowed in the corn belt die before market weight is reached. What is the one greatest cause for this loss? Why can't it be corrected?

According to a survey made some years ago "overlaying by the sow" was listed as the cause of heaviest mortality. At the time the survey was made one pig out of each litter, or a total of 12% of all pigs farrowed, were killed by the mother.

Some of these losses have been lessened through better farrowing arrangements and better care immediately after birth. Use of guard rails in farrowing pens and installation of electric brooders and heat lamps the past few years have reduced the farrowing losses notably, but just how much on percentage basis it is impossible to say. There are still thousands of farms on which no heating equipment is used. There are also thousands of farms on which mature heavy sows are kept for litter production and these are given no special attention even though they are clumsy and awkward. Placed in pens that are too small they are hazards in the whole production program. Unless larger pens are provided and guard rails attached, losses will continue to be high.

For a central hog house that is well built, would it be better to install electric brooders in the 20 farrowing pens or set up a heating system that will warm the house as well as the pens? My spring litters are farrowed in northern Illinois in February. We have really cold weather at that time, and I want a system that will give plenty of heat at lowest cost.

For cold weather farrowing you might use both heating plant and electric brooder or heat lamp. A 20-pen house could have a heating unit, oil or coal burning, to keep the building comfortable and dry. If thermostat controlled, a temperature in the 60's would be suitable for the sows. Then, by having a brooder or heat lamp in each pen a warmer spot will work wonders with the small pigs. A heat level in the 80's will not be too hot for newly farrowed litters. The brooder or lamp can furnish these extra 20 degrees without too much cost.

A centrally located heater, alone, will keep the building dry, but cold air trapped in the pens makes uncomfortable quarters for young bodies. With electric brooders or heat lamps to pour the heat where needed in the pens, sows need not be overheated in order that pigs feel warm and happy. For the cost involved, both heat sources will pay dividends.

What per cent of the nation's corn crop is fed to hogs? Is it more than the amount fed to cows and beef cattle?

Hogs eat about fifty per cent of the nation's corn production. Poultry consumes one-half of the other fifty per cent and cattle feed and other uses account for the remainder. It is generally rather startling to the cattle owner to learn of his small part in corn utilization.

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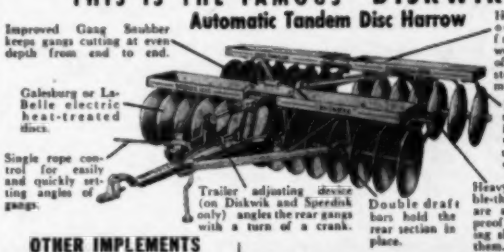
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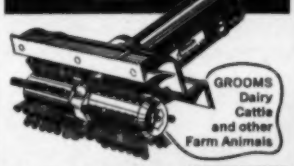

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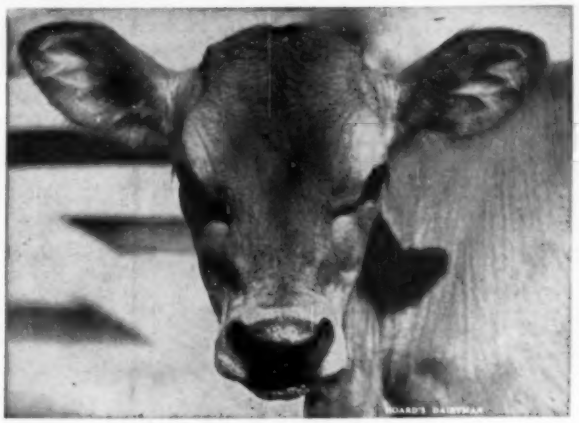
Junior Dairymen

How to FEED YOUR CALF after the first three days

For best results, outline a definite program for feeding your calf. Below three different methods are discussed.



ON THE junior dairymen page of the previous issue we discussed the care and feeding of the newborn calf during the first three days of its life. We also promised to discuss in this issue some of the different methods of feeding the calf after the first three days.

This is one of the most difficult subjects in the dairy field to discuss objectively because there are so many different opinions and conditions to consider. For example, each calf is an individual in a different environment. Each one needs individual treatment. Then, too, when we look to nutrition experts for advice and suggestions for feeding, we find generally that each has a different slant on the problem. They differ in personal viewpoints and research data on the subject of feeding calves.

We have attempted, however, to pull out some of the main points of the different calf feeding methods. The success you enjoy from any one of them will depend partially on your own good judgment.

NURSE-COW METHOD

You may prefer to feed your calf according to the nurse-cow method. If you do, it is best that you have a cow with a low butterfat test for the purpose. Otherwise, there's a good chance that your calf will get too much rich milk.

The nurse-cow method of feeding your calf will take less work than other methods, and you'll have fewer calf troubles, especially scours. But that doesn't mean that a calf being fed with a nurse-cow can't get scours. You'll have to watch carefully to see that the calf is getting the right amount of milk.

Most cows are able to produce more milk than is good for one calf. Therefore, more than one calf can nurse on the cow. If you know how much the cow is giving, you can gauge how many calves she can properly feed. Each calf should get no more than 8 to 10 pounds for the first few weeks. A Jersey or Guernsey calf should perhaps not get over five or six pounds per day at first.

You can wean your calf at 7 to 10 weeks of age and raise it on a dry calf starter, or you can leave it on the cow for three to four months and feed grain and hay as with the pail method of feeding calves whole milk.

WHOLE MILK-SKIMMILK METHOD

This method of feeding your calf will give you excellent results. It is most satisfactory if the price permits the feeding of milk longer than the first few weeks. Generally, the method involves feeding whole milk at the rate of 8 to 10 per cent of the liveweight for at least a month, and then liquid skimmilk or reconstituted skimmilk powder up to 12 to 16 pounds daily, until the calf is four to six months of age.

Again, you must be careful in the feeding of whole milk to your new calf, especially during the first few days of its life. If it gets too much, it may develop scours or other digestive troubles.

As to feeding the milk to your calf, nipple pails are sometimes considered to be better than just bucket feeding. Sucking a nipple causes the calf to drink more slowly. It also sends the milk directly to the true stomach, where digestion occurs.

Dried skimmilk is a satisfactory feed for calves when fresh milk is not available. Whether or not you use it will depend upon the cost of powdered skimmilk in comparison with the cost of milk substitutes and dry calf starters.

You can prepare powdered skimmilk for feeding by mixing one pound with nine pounds of water. Mix it fresh at each feeding and feed it in the same manner and amounts as liquid skimmilk.

Generally calves will start to eat some grain by the end of the second week. A young calf will often eat whole oats or coarsely cracked corn or other grains more readily than it will a mixture of finely ground grains. As the calf gets older it will not chew feed so thoroughly as at a younger age; therefore, all concentrates should be ground. The same grain mixture as that given for the dry starter method is satisfactory to feed right from the beginning with the whole-milk method.

Some feeding experts recommend feeding high quality hay with this method, keeping some leafy, fine-stemmed hay before the calf at all times.

LIMITED WHOLE-MILK AND DRY-CALF STARTER METHOD

This method is used when you wish to raise calves on a minimum of milk. It is an economical method and the care and labor required in feeding are reduced to a minimum.

The calf should be allowed to nurse the mother for two or three days and then be taught to drink from a bucket or a nippled pail. The calf should be fed this way for the first two weeks. While no definite amounts to feed can be recommended, one of the best rules to follow is to feed no more than one pound of milk for each 10 pounds of the weight of the calf. This may amount to 8 or 10 pounds of milk per day if it is an Ayrshire, Brown Swiss, or Holstein, and about 5 to 8 pounds if it is a Guernsey or Jersey.

At the beginning of the second week the calf should be given a taste of the dry starter. Rub a little into the calf's mouth after each feeding of milk. Also, keep some of the starter before the calf at all times, and change it each day so that it will be fresh. This will make it necessary for you to feed only about as much as the calf will clean up in one day.

Some calves will eat more of the starter than others, but feed each calf all it will eat until a daily maximum of four pounds is reached for the larger breeds and 3½ pounds for Guernseys and Jerseys. Most calves reach this consumption when they are about 12 to 14 weeks old.

There are many kinds of good calf starters to be bought on the market. Some are sold in the form of dry meal, some in pellets, and others are a mixture of meal and pellets. Some calves may prefer the meal, while others like the pellets better. Even calves have their own individual preferences. No matter what type of commercial calf starter you may buy, it is always wise to follow carefully the feeding instructions of the manufacturer.

The total amount of milk to be fed on this dry-

This makes a cute picture, but it's a poor method of feeding calves. Here they fight and scramble for a drink of milk, the feeder not knowing how much each is getting. Calves should be fed individually, each getting a definite amount.

feeding method can be figured at 150 to 350 pounds. After the calf is started well on the dry feed, the milk can be gradually reduced at the rate of about a pound a week, and stopped altogether when the calf is about 10 weeks old.

Milk Substitutes

There are now on the markets milk substitutes, in powder form, which are diluted with water and can be fed in the place of milk, starting about a week after the calf is born. The manufacturers of these substitutes recommend feeding them along with other commercial dry starters or with homegrown grain feeds. The substitutes can be used to replace milk in either the whole milk or the limited milk feeding method.

Here's an important point to remember. The amount of milk you feed your calf may differ from the amount another person may feed, but you should weigh the milk for each feeding so that the calf gets the same amount each time. The "guess and by golly" method of feeding calves is not a good one.

When the calf is about 12 to 14 weeks of age it can be changed over from the commercial calf starter to a growing or fitting ration. Here's a ration that you might use:

280 pounds ground corn
300 pounds ground oats
300 pounds wheat bran
100 pounds soybean oilmeal or linseed oilmeal
10 pounds salt
10 pounds steamed bone meal or dicalcium phosphate

1000 pounds, total.

This ration is suggested in a Cornell Extension bulletin and contains about 14 to 16 per cent total protein. If you use a 16 per cent protein mixture for your dairy herd, there is no reason why such a mixture is not satisfactory for calves. In fact, if non-legume hay is fed, a 16 or 18 per cent protein grain mixture may give better results than one lower in protein. Feed about 5 pounds daily to a calf of the larger breeds, and about 4 pounds daily to a Jersey or Guernsey. In addition to the possibility of feeding homegrown grains, there are also many good commercial growing feeds on the market.

Feed Hay?

In addition to feeding grain or a commercial growing feed, most college specialists recommend giving calves free access to high quality hay. Any variety of hay that was cut early and cured in such a way as to preserve the leaves and green color makes good calf hay. Be careful, however, not to give young calves too much rich, green alfalfa. It has a tendency to cause them to scour. In fact, some nutritionists recommend not feeding any hay until the calf is two months of age, as they feel it keeps digestive disorders down. In this case your own experience and good judgment is valuable. You may be feeding hay with good results and wish to continue.

Calves should also have free access to clean, fresh water at all times after they are about three weeks old. This is especially important with the dry-starter system because the amount of milk fed is relatively small, and young, growing animals have a high water requirement. It is also desirable to provide loose salt to calves and growing heifers at all times.

When Does Your Heifer Pay Off Her Debt?

Perhaps we don't always realize the investment we have in a heifer up until the time she freshens. Up to that time, we are putting everything in and getting nothing out. Generally it takes about two lactations for a cow to pay us back for the cost of raising her. If she is a poor producer and doesn't put enough in the bucket, she probably won't pay us for the cost of raising her to cowhood. Usually, her most profitable lactation is the fourth one.

Poverty in Riches

Who walks beside a rosebud
and does not sense its bloom,
Its lovely form and color,
its delicate perfume,
Who walks beneath the heavens
and does not see the sky,
The sunrise and the sunset,
the tints that glow and die,
Who treads a rural pathway
and never hears a bird,
Nor notes the trembling grasses
a passing breeze has stirred;
Who dwells among his fellows
and sees them pass his door,
Not even hears their foot beats,
is pitifully poor.
—Author unknown.

"I guess my father must have been a pretty mischievous boy," said one youngster.

"Why?" inquired the other.

"Because he knows exactly what questions to ask when he wants to know what I have been doing."

"I finally found a way to keep my dairy barn perfectly clean. I sold all my cows."

About Birds

Birds live at a faster rate than most other creatures. Their body temperature is higher, their pulse beats faster, and their blood has more red corpuscles per ounce than that of any other animal.

It takes a good set of muscles to keep a bird's wings beating for hours on end and with some species the pectoral muscles which raise and lower the wings may weigh half as much as the entire bird, bones and all.

To keep their weight down many birds have hollow, air-filled bones. The number of these bones varies with the species and with some birds it is carried to such an extent that a five-foot pelican weighing twenty-five pounds is said to have a skeleton of only twenty-three ounces.

There are several groups of birds who are "grounded" for a period each year. At the molting season all their primary wing feathers fall out about the same time and they can't fly until the new ones develop. These include the ducks and geese and such sea birds as the auks, guillemots and puffins. They are all good swimmers, though, and the sea birds are expert divers as well, so they stay out on the water for safety.

A bird doesn't fall out of bed, because it can't. When it bends its knees and ankles to sit down on a perch, this automatically tightens a tendon that curls the toes into a firm grip. The bird can't even let go until it stands up again.

One of the biggest mysteries of bird life is how the flocks of young birds can fly to a winter home they have never seen before over a route they have never traveled before and do it with no older birds to guide them. Indeed, how do they know enough to fly south in the first place when they have never seen such a thing as a winter and have had no experience that tells them to avoid it?—JOHN H. SPICER in Our Dumb Animals.

It's Up to You, Son

With doubt and dismay you are smitten;
You think there's no chance for you, son,
Why, the best books haven't been written,
The best race hasn't been run.
The best score hasn't been made yet,
The best song hasn't been sung,
The best tune hasn't been played yet,
Cheer up, for the world is young.

No chance, the world is just eager
For things you ought to create.
Its store of wealth is still meager,
Its needs are incessant and great.
It yearns for more power and beauty,
More laughter and love and romance,
More loyalty, labor and duty,
No chance — there's nothing but chance.

For the best building hasn't been planned yet,
The highest peak hasn't been climbed.
The mightiest rivers are unspanned yet,
The clearest toned bell hasn't chimed.
Don't worry and fret—faint-hearted,
The chances have just begun,
The best jobs haven't started yet,
The best work hasn't been done.

A little boy came home from school with a terrible report card for January. "My goodness," said his mother when she saw it, "what happened?"

"Oh, nothing special," answered Billy. "You know how it is. Things are always marked down after the holidays."

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The rate for advertising in this department is 30 cents per word per insertion, except for "help wanted" and "positions wanted" advertising which is only 20 cents per word per insertion. Count address. "J. W. Foley, Route 13, Green Bay, Minnesota," is considered as eight words. Blind advertisements must be signed: "BOX 25, care Hoard's Dairyman, Fort Atkinson, Wisconsin" and count as 8 additional words. Count each initial or group of figures as a word. SEND CASH OR CHECK WITH ORDER. Copy must reach us four weeks ahead of date of issue. NEW ADVERTISERS MUST FURNISH REFERENCES. Send order to HOARD'S DAIRYMAN, Fort Atkinson, Wisconsin.

DAIRY CATTLE

FOR Sale—100 head open and bred Holstein and Guernsey heifers. Can furnish springer cows and heifers and small calves. Write or phone C. A. PAULSON AND SON, Neillsville, Wisconsin. 10-*

PIPER Bros. Farm—Purebred and grade Holstins, production, type, pedigrees and health. Let us quote you prices on quality Holsteins. Phone 2170. Waterloo, Wisconsin. 5-*

REGISTERED Holstein calves. D. L. CAVEY, Elkhorn, Wisconsin. 11-*

KEATING Bros. Farm. Largest selection better Holstein and Guernsey, Bang's and TB tested, fresh and springing cows and first calf heifers in Wisconsin. Save time and expense. We ship on orders. TELEPHONE 414 Nights. Fort Atkinson, Wisconsin. 5-*

KENYON Brothers Farm serving the dairy farmer for forty years. Large selection of choice Holstein cows and first calf heifers, fresh and close springers, service bulls, T.B. and Bang's tested. In carload or truckload lots. KENYON BROTHERS CO., Elgin, Illinois, Phone Elgin 1910. 1-*

CALVES—From the dairyland state. Registered Holstein, Guernsey, Brown Swiss heifer and bull calves. Registered and grade Holstein pasd cows. Any quantity, any age. Low prices. Buy on approval. We ship C.O.D. J. M. McFARLAND & SONS, Watertown, Wisconsin. 1-2

WANTED—14 - 3 and 4 year old registered Holsteins. March delivery. Type, production tested, calfhood vaccinated. Prefer family bloodlines. Write particulars, breeding price. Various freshening acceptable. CLARENCE HAVERLY, Elgin, Illinois.

WANT to buy 30 or 40 first calf Holstein heifers, out of high production herds, ready to freshen, TB and Bang's tested. Write CHRIS PASCHEN, 1450 Clybourn Avenue, Chicago 10.

ATTENTION dairymen and cattle dealers. We can furnish you Holstein heifers to freshen this fall. Cows of all breeds. Let us know your needs. We can supply them. BOTTEMA Farms, Bridgeport, Ind. Plainfield 8266. 20-*

LARGE selection of Holstein and Guernsey springer heifers; also younger heifers and young springer cows. CHESTER FROBERG, Valparaiso, Indiana. 17-*

OPEN and bred heifers, big springer cows and calves. Holsteins, Guerneseys and Swiss. Farmers, let me take care of your needs. JACK MULLOWNEY, Tomah, Wisconsin. 2-5

DAIRY Cattle—Large selections of choice Holstein and Guernsey springer and fresh cows and heifers. T.B. and Bang's tested. STANLEY BURNRIDGE & SON, "Grand Hotel" for Dairy Cattle, Elgin, Illinois (Hotel Accommodations). Established 1910. 18-*

REGISTERED—Guernsey calves, K. V. FARM, Elkhorn, Wisconsin. 11-*

DAIRY Cows—Largest selection of high class dairy cows in Michigan. One or a carload, we have what you want. Unusually good selection of registered Holsteins of all ages at this present time. We can deliver cattle anywhere. MERLE H. GREEN & SONS, Elsie, Michigan. 3-*

DAIRYMEN! We can help you get choice quality dairy cows and heifers. Sold either on order, commission, or direct. Contact BILL GEURKINK or J. W. GEURKINK, Baldwin, Wisconsin. 7-*

HUNDRED choice dairy cattle. Guaranteed as advertised. Transportation from Chicago. H. F. CLOW, Plainfield, Illinois. 17-*

CATTLE MARKERS

DAISY Cattle Markers complete with chain, brass tag for horns and neck. Write for folder. GOLDEN ARROW FARMS, Dept. C, Huntington, Indiana. 16-*

STOCKMEN'S SUPPLIES

STOCKMEN'S Hickory Cane $1.00. Dacron rope halters $6.00. Electric dehorner $6.00. Obstetrical chain for pulling calves $1.00. Livestock cobalt $1.00. Fifty mastitis detector blotters $1.00. Pig tooth nippers $2.00. Castrating knife $1.25. Aluminum strip cup $1.40. Trocar $1.20. All postpaid. Satisfaction guaranteed. Free catalog lists world's most complete line of special stockmen's supplies. Write NASCO, Fort Atkinson 14, Wisconsin. 1-6

ARTIFICIAL insemination supplies and instruments. Technical information. Catalog on request. BREEDERS EQUIPMENT CO., Flemington, Pennsylvania. 7-*

ARTIFICIAL breeding equipment. Largest, most complete line. Write for free catalog. NASCO, Fort Atkinson, Wisconsin. 1-*

FOR caked or congested udders use Cohosa Liniment. Dairymen say, "Best ever, takes caked out overnight." Postpaid $1. W. G. INNERST, Cortland, N. Y. 25-apl

HORN weights. 80c per pair postpaid. Made in 4 sizes ½ lb., 1 lb., 1½ lb., and 2 lbs. Tattoo markers $4.75 postpaid, includes set of numbers, bottle of ink and full directions. We also carry complete line of ear tags, neck chains, veterinary instruments, supplies, serums, remedies; in fact, everything for the stockman. Write for free catalog. BREEDERS SUPPLY CO., Council Bluffs, Iowa. 18-*

FARMS FOR SALE

WE specialize in farm lands, small and large tracts. BRADHAM REALTY COMPANY, Realtors, No. 2 N. Main St., Phone 66, Sumter, South Carolina. 32-S

HIGHLY improved Wisconsin farms! 180 to 273 acres. Wonderful buildings including modern homes! $73.22 to $96.25 per acre! Ask about them! BAKER 2213, St. Croix Falls, Wis. 1-2

FARMS FOR SALE

FARMS—In finest section of Georgia. General farming, livestock or game preserve. All year 'round grazing. 50 to 1,000 acre tracts. Running streams. Write us what you want. H. O. WILLIAMS CO., Griffin, Georgia. 1-3

OREGON'S famous Willamette Valley. Dairy, stock and general farms. Write for catalog. KINGWELL AGENCY, Box 267, Corvallis, Oregon. 20-*

STROUT'S Catalog—Farms, homes, country businesses. World's largest! 3029 outstanding bargains, 31 states. Mailed free! Buy now and save through STROUT, 7 So. Dearborn St., Chicago 3, Illinois. 2-3

FARMS FOR RENT

INTERESTED in competent experienced Dairyman, on share basis, with own machinery and capital. Quarter section, Barrington, Illinois. Completely equipped with modern buildings, set up for Guernsey herd operation. Con. March 1st, 1951. Address BOX 236, Des Plaines, Illinois.

FEED BAGS

WE pay highest prices for your empty cotton and burlap feed bags. Write for our quotations. THE DAYTON BAG AND BURLAP COMPANY, Dayton, Ohio. 1-*

FERTILIZERS

ARROW Brand thirty per cent phosphate rock direct from our mines to you. Also contains forty per cent calcium oxide and "trace" elements. Reasonable prices. Literature. ROBIN JONES PHOSPHATE COMPANY, Nashville 2, Tennessee. 1-6

RUHM'S phosphate rock pays you best. And it costs you less if you count the results. Ground finer by far than any other it is quicker acting, achieves better distribution in the soil, so plants get more out of it—and so do you. Get the facts! Write for folder or name of nearest dealer. RUHM PHOSPHATE & CHEMICAL CO., 8 S. Michigan Ave., Chicago 3, Illinois.

HAY AND BEDDING

FOR Sale: Choice first cutting alfalfa hay. LAWRENCE LUETY, 1595 Prairie Avenue, Beloit, Wisconsin. 2-3

HAY—Alfalfa, clover, and mixed. Ask for delivered prices. HARRY GATES, Jackson, Michigan. 23-8

WANTED: Straw of all kinds. By carload or truckload. What have you? Also interested in Timothy or good mixed hay. JOHN HENRICKS, INC., Arlington Heights, Illinois. Phone A. H. 185 or 448. 2-*

STRAW wanted. For sale—bale ties and coil wire. OSBORN HAY & MILLING COMPANY, Oshkosh, Wisconsin. 24-apl

SHAVINGS, baled or loose. For livestock bedding and poultry litter. Carload lots only. Write for prices to JAGERSON FUEL CO., Box 604, Neenah, Wisconsin. 1-*

FARM EQUIPMENT

FREE barn plan book. Best ways to build or remodel your farm buildings. Send for details. LOUDEN, Dept. 3, Fairfield, Iowa. 1-24

LIQUID manure pumps. We manufacture the Tillamook liquid manure pump and the flexible chain harrow. STEINBACH IRON WORKS, Tillamook, Oregon. 23-*

COW stalls, pens, steel windows, hay carriers, steel fence post, post pullers. Immediate shipments. STANDARD EQUIPMENT, INC., Bel Air, Maryland. 18-*

WOULD you like your cows to hit the gutter every time and stay clean? Complete details $3.00. Check or money order. A. G. MacWILLIAMS, Reidsville, North Carolina.

MODERN flame thrower splits rocks, thaws, disinfects. Saves labor. Destroys weeds, stumps. 100 uses. Free bulletin. SINE, D23, Quakertown, Pennsylvania. 2-4

WANT to buy second hand W-9 tractor and T-6 Caterpillar. Must be in good condition. Write CHRIS PASCHEN, 1450 Clybourn Avenue, Chicago 10.

MOTORS ½ horse $15, ¾ $22, 1 $35. Compressors $17.50. Other bargains. State your needs. BUTLER, 1085 Milwaukee, Chicago 47.

ELECTRIC Barn Cleaner—Strong continuous gutter shoveling—increase dairy profits. Produce Grade A milk. For herds 15 to 100 cows. 3 size cleaners. Rust resistance chain — no pit — 8 chute positions. Low cost installation old or new barns. Get facts now. Free catalog. Write today. CLAY EQUIPMENT CORP., 2511 N. E. Olive Street, Cedar Falls, Iowa.

BARN Equipment—Modernize your barn with Simplex stalls, stanchions, pens, water bowls, misc. ventilation gear. Write for catalog. SIMPLEX BARN EQUIPMENT, Marshfield, Wisconsin. Dept. A. 14-*

DAIRY EQUIPMENT

ONE—Cherry Burrell Corp. Superplate heater—20,000 lb. per hour milk. 28 transfer plates—serial # 24C-45-744 complete with C-24 press, circulating unit, pump and controls. One—Cherry Burrell Corp. Superplate cooler—7,000 lb. per hour—serial # 24C-45-745. 19 transfer plates. 1 C-24 press, complete with two pressure gauges. One—60 gallon Stoneware acid bottle. One—25 gallon Stoneware acid bottle. Practically new. All equipment offered subject to prior sale. Address: ARCHER-DANIELS-MIDLAND COMPANY, 600 Roanoke Building, Minneapolis 2, Minnesota. 1-*

HELP WANTED

HELP Wanted—Male, experienced, single, dairy or poultry. Excellent working and living conditions. Steady year-round work. LARRO RESEARCH FARM, 20921—10½ Mile Road, Detroit 19, Michigan. 17-*

OPPORTUNITY for single experienced milker to work into job with real responsibility. Absentee ownership. Outstanding Holstein herd. Near Chicago. BOX 619, care Hoard's Dairyman, Fort Atkinson, Wisconsin. 22-*

SINGLE man to work with 500 to 600 pound Holstein cows, Pabst breeding, and to help with field crops, in northern Indiana. BOX 629, care Hoard's Dairyman, Fort Atkinson, Wisconsin.

WANTED — Well-qualified efficient dairy farm manager who would like to take full charge of a newly established 42 cow Holstein herd and develop to a large successful enterprise on a liberal share basis. Loafing shed. De Laval combine and necessary equipment. New modern three bedroom house, conveniently located on all-weather mail and school-bus route near Jefferson City. Prefer but don't insist that man have some capital for the purchase of additional cows. LYNNWOOD FARMS, Tobbetts, Missouri. 24-3

HELP wanted on Large Certified Milk Farm. Good wages. Pay for overtime. Room and board reasonable. Opportunities for dependable men. Write for information. WALKER GORDON LABORATORY COMPANY, Plainsboro, New Jersey. 24-apl

MARRIED man to do general work on dairy farm. Must have experience. WILLIAM MIZER, Danville, Ohio. 1-2

FARMER herdsman for small registered Holstein herd H. I. R. and well equipped one man farm, modern home, one-half mile to large consolidated school, two miles County seat, northern Illinois. Good pay and a future for right man. BOX 631, care Hoard's Dairyman, Fort Atkinson, Wisconsin. 1-2

WANTED: Experienced single man to work on dairy farm. No liquor. Wages $120 per month, board, room, and washing. References required. E. A. BEHRENTS, Richmond, Illinois.

HERDSMAN, married couple and single man, to operate 160 acre farm and to develop purebred Holstein herd following Pabst breeding. References required. BOX 646, care Hoard's Dairyman, Fort Atkinson, Wisconsin. 2-3

HERDSMAN Wanted—Start February 1 or March 1. Full time in barn. Must be alert, reliable and capable. Here is good opportunity. References. HOARD'S DAIRYMAN FARM, J. E. Parker, Mgr., Fort Atkinson, Wisconsin. 2-3

EXPERIENCED single man to work with herd of Holstein cows. Past draft age. BOX 651, care Hoard's Dairyman, Fort Atkinson, Wisconsin.

WANTED: A good cow man, single or married, who likes purebred Guernsey cattle and willing to work. Pleasant surroundings on northern Illinois farm. A good place to work. We like our place clean, cows well groomed and all workers interested. References wanted. BOX 634, care Hoard's Dairyman, Fort Atkinson, Wisconsin.

SINGLE or married man to take charge of milking herd on modern dairy farm. Located ½ mile from town with electricity and running water furnished. Prefer man presently employed as head milker or assistant herdsman interested in making permanent connection. Furnish references. Write BOX 650, care Hoard's Dairyman, Fort Atkinson, Wisconsin.

WANTED: Experienced single man interested in caring for herd of registered cattle. Also man for field work. All modern equipment, modern home. Salary open. Write SIDNEY NELSON, Lombard, Illinois.

WORKING manager capable of taking complete charge of 175 acre modern Illinois dairy farm. Must be thoroughly experienced, willing, hard worker of character and dependability with best of references. Top salary and liberal bonus. Large newly remodeled house. All other buildings and machinery new. Very good opportunity and comfortable home for the right man and family who know value this. Owner lives in Chicago. BOX 649, care Hoard's Dairyman, Fort Atkinson, Wisconsin.

WANTED—Married man to work on dairy farm, all modern house, top wages to well qualified man; also middle-aged single man to milk test cows, best working and living conditions. PEBBLEBROOK FARMS, Chesterland, Ohio, Robert Snow.

FARM manager (married or single), willing worker, experienced, able to supervise men in field and maintenance work on 600 acre dairy farm of 300 head, 30 miles from Chicago. No milking or livestock responsibilities. State salary expected and other particulars relative to family status and experience. BOX 645, care Hoard's Dairyman, Fort Atkinson, Wisconsin.

HERDSMAN about 40 years old to take charge of herd on dairy farm in South Carolina. Good pay, a comfortable home with all conveniences are offered for the right man. Apply to BOX 646, care Hoard's Dairyman, Fort Atkinson, Wisconsin, giving experience and character references.

WANTED: Dairy herdsman, college graduate, experienced in artificial insemination, qualified to manage herd of 100 cows on milk. Production stressed, not purebred herd. Good opportunity for right man. Reply BOX 646, care Hoard's Dairyman, Fort Atkinson, Wisconsin.

WANTED middle aged or older single man for small dairy farm, northern Illinois. Must be experienced dairy hand. Will tolerate smoking and light drinking. Write BOX 647, care Hoard's Dairyman, Fort Atkinson, Wisconsin.

AGENTS WANTED

EXTRA cash—easy! Sell friends newest design 21 for $1.00. Call card, novelty all-occasion greeting card assortments, gift wraps, animated books. Profits to 50c per $1.00 box. Special offers. Bonus. Prompt service. Experience unnecessary. Write today for free samples name imprinted scented stationery, napkins, book matches, feature assortments on approval, free catalog, selling plans. ELMIRA GREETING CARD CO., 2182 Elmira, New York.

GRAND New! Amazingly different and smart everyday cards. 21 for $1. Magic window designs. Take easy orders. Make up to 100% cash profit. Big line $1 assortments, personal stationery, imprinted matches. Free imprint samples. Assortments on approval. NORTH STAR, 321 Glenwood, Dept. P-62, Minneapolis, Minn. 1-4

WIN real cash. Even beginners make handsome profits selling new 21 for $1.00, 3-dimension everyday greeting card assortments. Novelties, gift wraps, household items. Free samples imprinted stationery, napkins, notes. Deluxe all-occasion samples on approval. Bonus. Special offers. Write PILGRIM GREETINGS, 111 Summer, Dept. CL-1, Boston, Mass.

SALESMEN WANTED

SALESMAN, distributor and dealer to sell the finest low vacuum milker on the market, also other dairy equipment. Write for complete details. CHORE-BOY MILKING MACHINE COMPANY, 819 East Kalamazoo Street, Lansing 11, Michigan. 25-4

AUCTIONEER SCHOOLS

LEARN auctioneering, terms, soon. Free catalog. REISCH AUCTION SCHOOL, Mason City, Iowa. 23-*

SEEDS AND PLANTS

SENSATIONAL new, exclusive Gro-Coated processed farm seed. Disinfects seed. Growth Stimulator added. Produces up to 2½ times as many plants. Save money—Berry's tested and guaranteed quality seed at low direct prices. Domestic Alfalfa $18.60 bu.; Grimm $26.70; Red Clover (contains some Alfalfa) $20.85; Sweet Clover $6.90; Timothy $6.30; Alsike Clover $23.70. Gro-Coated prices slightly more. Many other grasses, legumes, grains. New varieties. Nemaha 66 Soybean, Medador oats, etc. Free big catalog, samples, prices. BERRY SEED COMPANY, Box 455, Clarinda, Iowa. 24-7

FOR Sale: Ladino Clover $1.48 lb. Certified Moore Barley $2.30 bu., Jefferson. Few agents wanted. Also have certified oats. Ladino straw $18 ton. LLOYD SCHULD, Seeds, Jefferson, Wisconsin. 1-3

HARDY Northern Alfalfas—yield heaviest. Write for early price list our Northern Alfalfas. $30.00 bushel and up. All varieties, also Clovers and Grasses. MONTANA SEED COMPANY, Bozeman, Montana. 24-4

GENUINE Empire Birdsfoot Trefoil Seed of high quality. Introductory price $2.00 postpaid F.O.B. until March. Minimum order, 10 pounds. Send shipping instructions with your order. CYRIL CROWE, Dryden, New York.

ALFALFA, U. S. grown, $18.40 per bu.; Hardy Grimm $26.70; Red Clover, contains some Alfalfa, 99% pure, $21.90; Brome Grass $3.00; Alsike Clover $22.90; Sweet Clover $7.30; Timothy $6.50; Hybrid Corn $4.75. Prices low on many other items including new varieties. Ranger Alfalfa, Madrid Sweet Clover, Certified Shelby, Nemaha, Cherokee, Zephyr Seed Oats. Send for free circular on sensational new Gro-Coated processed seed — produces up to 2½ times as many plants as the same seed not Gro-Coated. Most varieties Gro-Coated for slight extra charge. Our seeds reclleaned and tested. Guaranteed satisfactory and sold subject to your 30-day test. Write for free samples and new 1951 catalog. AMERICAN FIELD SEED COMPANY, Dept. 355, Chicago 9, Illinois. 24-6

DOGS

GENUINE English Shepherd and Collie Pups. Healthy and strong. Guaranted heelers. Year's trial. Choice of sex. Spayed females a specialty. Priced right. CLOVERDALE KENNEL FARM, Ackley, Iowa. 18-*

SHEPHERDS, Collies, outstanding heelers, watch dogs. ZIMMERMAN FARMS, Flanagan, Ill. 5-*

COLLIES—The kind that bring home the cows. Guaranteed to please you. Dept. H, SHOMONT KENNELS, Monticello, Iowa. 12-*

WORKING Border Collies. From imported parents. We have the best. HOWARD McCLAIN, Route 6, Lima, Ohio. 24-*

ENGLISH Shepherds—Border Collies. America's most useful dogs. Puppies all ages. Both sexes. Choice colors. Faithful workers. Satisfaction guaranteed. We breed and sell our own stock. FAIRMOUNT FARMS, Cedar Falls, Iowa. 1-4

ENGLISH Shepherd puppies, heelers, watchdogs, companions. D. W. YODER, Nappanee, Indiana. 2-2

PUPS from my imported registered Border Collies, move wide, fast and smooth. They'ng handsome, intelligent and possess an abundance of life. M. S. PERROT, R-6, Gentleman Road, Ottawa, Illinois.

RABBITS

MAKE Big Money! Raise Chinchilla rabbits. Cash markets supplied for your production. Write today! ROCKHILL RANCH, Sellersville 61, Penna. 1-6

EARN up to $400 monthly raising Angora or New Zealand rabbits. Plenty markets. Particulars free. WHITE'S RABBITRY, Newark 50, Ohio. 2-*

POULTRY—BABY CHICKS—DUCKS

BABY Chicks: 27 kinds. Sent on approval. As hatched, sexed or started. Poults. Ducklings. Free price list. Big catalog free. PLEASANT HATCHERY, Pleasant Hill, Missouri. 1-4

BROILER Crossbreed Chicks—New Columbians—crossbreed sensation in the eastern markets. Earliest maturing to bigger, heavy breasted yellow skin broilers, roasters, capons. Beautiful premium quality. Sell on sight. Broiler Hampshires, also. We supply leading large-scale broiler operators. No order too small or too large. Catalog free. SUNSHINE HATCHERIES, Box 3146-A, Corydon, Indiana. 1-4

CHICKS on a 30 days' trial guarantee. All varieties Missouri approved. B.W.D. blood-tested. Easy buying plan. Low prices. Chick manual free. MISSOURI STATE HATCHERY, Box 113, Butler Missouri.

15 YEARS breeding of R.O.P. sired chicks. All leading breeds and crossbreeds. Pullorum passed. New prices for early orders. Free literature. Send postcard to GENERAL CHICKS, Box 4-A, Rich Hill, Missouri. 1-6

CORNISH-ROCKS, Cornish-Hamps, Wyandotte-Rocks, Austra-Whites, Hampshire-Leghorns, other broiler and layer crosses. Production purebreeds, too. Catalog free. STANDARD HATCHERIES, Box 1031-A, Terre Haute, Ind. 1-2

POULTRY farmers — broiler growers — turkey raisers read the new American Poultry Journal for latest ideas and greater profits. Six months, 50c. Special offer, 4 years, $1.00. AMERICAN POULTRY JOURNAL, 532 South Clark, Chicago. 21-6

SWINE

REGISTERED Berkshires. Sired by 3 State Fair Champions. Practically grade prices. OLIO ADAMS, Hartland, Wis. 24-*

REGISTERED Minnesota No. 1 lean meat type hogs. Litters 10 to 15. Immunized. HESP-RICH FARMS, Lomira, Wisconsin. 1-4

(Continued on next page)

Raise LESS Chicks Make MORE Money

Let Berry prove you can do this! NEW CHICKENS replacing old-style poultry on thousands of farms. Less loss. Less feed cost. Fewer culls. Startling increase in egg production, year around. Proven results have already sold millions coast-to-coast.

Crosses World's Best Egg Breeds

Started Pullets

Berry's Super-Deluxe Bengolds—golden-white chicken with golden-yellow skin and legs; and Berry's Super Deluxe Austra-Whites—both with pedigree 200-300 egg blood breeding. Fast replacing old kinds. Day-old or started.

Save you work, worry, loss. Lay eggs to sell a month earlier.

Assortments Low as $29.90 per 100

Write for FREE BOOK giving full details.

Asst'd Chickens $22.90 F.O.B.

BERRY'S famous Austra-Whites

(Write nearest address)

GEORGE BERRY, 1457 Ajax Rd., Quincy, Ill.
ERNEST BERRY, 1457 Sunflower Rd., Newton, Kans.

SILOS

BE sure and see Van's concrete stave silo before you buy. Excellent for both grass and corn silage. Immediate delivery. Wisconsin only. For information write VAN'S SILO & CONSTRUCTION COMPANY, Oostburg, Wisconsin.

FILM SERVICE

ONLY 25c for 8 beautiful enlarged prints from your roll or negatives. (Trial offer.) 16—20c. Quick service. WILLARD STUDIOS, Box 35361, Cleveland, Ohio. 1-*

MISCELLANEOUS

QUILT Pieces—Big bundle, about 2 yards, bright new fast-color cotton prints. Patterns, free gift, $1.00. McCOMBS BROTHERS, 4519 Butler, Pittsburgh 1, Pennsylvania. 12-*

RIBBONS when you need them. Assorted qualities, widths, colors, lengths. Approximately 240 feet. Grand for gift tying and hairbows, $1.00 postpaid. RIBBON SHOP, West Brookfield 3, Massachusetts.

MAKE up to $55-$65 week as a Trained Practical Nurse. Learn quickly at home. Booklet free. CHICAGO SCHOOL OF NURSING, Dept. P-1, Chicago, Illinois. 1-6

RUPTURED? Positive comfort, no understrap, no steel, no elastic. Write SMITH MANUFACTURING CO., Preston, Ontario. 1-6

NEW Sparrow Trap. Rid your premises of disease-carrying, crop-destroying sparrows. Elevator-type, humane, factory-built, guaranteed. Nothing like it. Write for money back trial offer and free literature. RICHWOOD BOX MILL, 902 Detroit Lakes, Minnesota. 21-*

FARMERS! The Badger Farm Business Record (you buy only once) holds important transactions for life. Contains employee's social security wage records, loose-leaf system, simple, illustrated, cash, accrual basis. $3.00 postpaid. Inspection with refund guarantee. BADGER BUSINESS SERVICE, 1620 Jackson Street, La-Crosse, Wisconsin. 21-*

PHONOGRAPH records cheap. Catalog. PARAMOUNT, FJ-313 East Market, Wilkes-Barre, Penna. 24-*

OUTDOOR toilets, cesspools, septic tanks cleaned, deodorized with amazing new product. Just mix dry powder with water; pour into toilet. Safe, no poisons. Save digging, pumping costs. Postcard brings free details. BURSON LABORATORIES, Dept. F-14, Chicago 22, Illinois. 1-6

. . . HANDY HINTS . . .

TROUGHS FROM TRACTOR TIRES

I use old large tractor tires, cut in half, for feeding my little pigs. To cut the tire, I use a hatchet which I dip in water to keep wet as I am cutting. It is well to mark the tire with chalk before cutting, as it is easier to follow the line and cut the tire evenly. I usually put milk in one half the tire and grain in the other half, and find it very useful in this way.

Virginia. BRUNO H. WITTIG.

PUTTING SCREWS IN WOOD

My husband fixes our broken furniture himself, and when he finds it necessary to insert screws into hard wood he applies paraffin wax, soap, or oil to the screw first. The screw goes in much easier, and there is less chance of splitting the wood.

ELEANOR RICHARDSON.

Massachusetts.

PAINT MEMO ON SILO

At one of the farms where I test milk, the dairyman has painted on the walls of his silo, where the cutter is set up, the number and length of pieces of blower pipe needed to extend the pipe to the top of the silo. This eliminates the yearly measurement, or guess, which has to be made otherwise.

New York. HAROLD SISSON.

NUT PICK FOR SEWING

If you wish to sew burlap material or burlap bags and don't have a large sack needle, use an ordinary nut pick. Most of them have a small knob on the end of the handle. Tie the string below this knob with a slip knot.

Wisconsin. GUY C. TATRO.

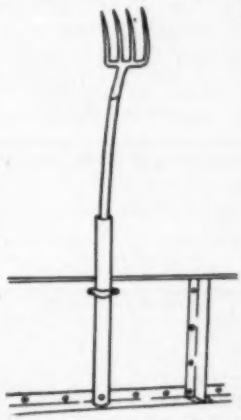
PREVENT GEARS FROM FREEZING

When hauling manure in winter I used to have freezing trouble with the small gears that run the apron on my spreader. Now on cold days I pour a little used crankcase oil, or even fuel oil, over the gears that drive the apron from the rear, and also the two front gears. This will keep the gears from freezing and they will work well in the coldest weather.

Wisconsin. ED J. MEYER.

FORK CARRIER

A handy carrier for a fork can be attached permanently to your manure spreader. Take a piece of 2 inch pipe about 2 feet long and bore holes in it for bolting to the spreader. Bore the top hole only on the inside of the pipe. Bore the bottom one completely through both



thicknesses of pipe, so that a bolt can be run all the way through, thus acting as a base to hold the fork from slipping all the way down. This carrier makes it possible to carry a fork on the spreader at all times without the danger of it being lost, falling into the spreader, etc.

Pennsylvania. ANDREW MIZERAK.

BACKING WAGON WITH TRACTOR

For backing a wagon with a tractor, we have found that extending the drawbar by bolting a piece of heavy strap iron to it is a big help. We bolt on a strap long enough to extend the drawbar 10 or 12 inches. This makes it possible to turn the front wheels of the wagon without turning the tractor wheels as much as is normally necessary. Also, we can keep the power on both tractor wheels because we don't have to use the brakes as much.

Iowa. MRS. WM. SCHOTT.

USING BUTTER BOXES

If you have a home freezer, you can put empty butter boxes to good use by using them as pint-size freezing cartons. To label each carton, you can easily stick an inch of adhesive tape on the box and write the necessary information on the tape.

Iowa. MRS. JOE T. SCHMITT.

HOARD'S DAIRYMAN

Classified Ads

OFFER YOU . . . YOUR OPPORTUNITY TO

BUY - SELL - TRADE!

Whether You Have Livestock, Machinery, Equipment, Hay, Bedding, or Whatever You Have to Sell . . .

HOARD'S DAIRYMAN CLASSIFIED ADS WILL SELL MORE! . . . QUICKER! . . . BETTER!

ACT TODAY — TIME MEANS MONEY

—— Write Your Ad On This Handy Order Blank ——

Start my ad in the first available issue. Run it ..... issues.
My ad contains ..... words. My check is enclosed for $.....

REMITTANCE MUST ACCOMPANY ORDER

Rates: 30c Per Word Per Insertion

Mail Today to Hoard's Dairyman, Fort Atkinson, Wis.

MASTICS® are the original udder bougie—penicillin plus streptomycin in a slim, smooth, quickly-soluble stick, with tapered ends for easy insertion.

MASTICS® mean MONEY TO YOU and here's why . . .

SO ECONOMICAL lowest cost per dose, most complete treatment, shortest recovery time.

SO POTENT penicillin backed up by streptomycin gives double-action effectiveness.

SO THOROUGH ready solubility of MASTICS in milk carries medication quickly throughout the entire infected quarter.

SO FAST cows are back in the milking line several days sooner—no greasy contamination of milk.

SO SIMPLE individually foil wrapped for individual insertion—no special equipment required.

MASTICS SAVE TIME—MILK—MONEY

Keep a supply of MASTICS on hand for immediate use at the first sign of trouble. And keep in close touch with your veterinarian—no one else is so well qualified to help and advise you.

Get MASTICS from your veterinarian today. If he can't supply you, please send us his name.

MASTICS are available in three dosage forms:
MASTICS P & S with penicillin and streptomycin
Regular MASTICS with penicillin
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®Trade-Mark Reg. U.S. Pat. Off.

THE MASTICS METHOD FOR MASTITIS CONTROL

The Martin Laboratories
West Chester, Penna.

GET SAMPLE FREE!

To ease painful touchy tests, minor cuts and scratches. Try it and see why Corona has been a first aid farm favorite for over 40 years—for all small wounds, chaps, cracks, galls.

CORONA ANTISEPTIC OINTMENT

Great for massage. Odorless antiseptic. Extra-rich soothing base. Helps fight infection, hasten healing. Many home uses.

Half-pound Can $1.00 At your Dealer

Write for free sample today.
The Corona Mfg. Co., Box 141, Kenton, Ohio

ENTRY BLANK PAGE 87

You will find an official entry blank for the 21st Annual Hoard's Dairyman Cow Judging Contest on page 87. For group entries, send your requests to Contest Department, Hoard's Dairyman, Fort Atkinson, Wisconsin.

To Revise Labels for Mastitis Treatments

All drug companies distributing penicillin and other antibiotics for the treatment of mastitis in cattle have been asked by the Wisconsin State Department of Agriculture to include on their labels a warning that milk from treated cows should not be used for at least three days after treatment is completed.

In a letter to drug companies, department officials pointed out that numerous complaints are being received from cheesemakers of failure of cheese starters because of the presence of the drugs in the milk of the treated cows. Since Wisconsin produces approximately one-half of the nation's cheese, the situation, unless remedied, may produce a serious economic loss to the dairy industry in the state.

While the milk from treated quarters is not suited for human use it is perfectly safe for calves, pigs, and chickens. Three days after the last treatment, the milk from treated cows may be safely used for cheesemaking or for human consumption.

In asking the cooperation of the drug manufacturers on the matter, the Department specifically suggested that the label should state "that no milk from treated quarters should be marketed for 72 hours after the last treatment."

Sale Announcements

Mar. 19 — Holsteins. Iowa Holstein Breeders' Association spring sale at National Dairy Cattle Congress grounds, Waterloo, Iowa. George M. Leland, corresponding secretary.

April 7—Guernseys. Waukesha County Guernsey Breeders' Association 39th Annual Sale at Waukesha, Wis. Frank Fox, Jr., Secretary.

April 20 — Guernseys. Iowa Guernsey Breeders' Association Annual Sale at Waterloo, Iowa. C. H. Jennings, Iowa City, Iowa, Chm. Sales Committee.

MAKE MORE PROFITS UNDER AVERAGE FARM CONDITIONS
-RAISE MILKING SHORTHORNS

For the average farmer, Milking Shorthorns are unbeatable. Produce 4% milk. Have greater carcass value than other breeds. Second to none in producing milk and meat from home-grown roughage and grain from your farm! Free facts. Or subscribe to Milking Shorthorn Journal, the monthly breed magazine. $1.00 a year; 2 years, $1.75. AMERICAN MILKING SHORTHORN SOCIETY • Dept. C-5 313 S. GLENSTONE AVE., SPRINGFIELD 4, MO.

RED POLL CATTLE

Dual purpose type in truest form. Always red - always hornless. Nurse cows on test last 3 yrs. ave. M 8844 3 - BF 371.8 4.2% test. Steers make choice beef.... Illustrated booklet & Red Poll News tell why. Breeders Directory tells where. Write Department HD

RED POLL CATTLE CLUB OF AMERICA
3211 HOLDREGE ST. • LINCOLN 3, NEBRASKA

BROWN SWISS

BROWN SWISS INFORMATION
Can be obtained free from
BROWN SWISS ASSOCIATION, Beloit, Wis.

JERSEYS

More PROFITS because
Jerseys Cost Less to Raise
Raising a Jersey calf to productive maturity costs less. You have the advantage of lower feed costs, less barn space. Pick registered Jerseys for greatest profits.
The American Jersey Cattle Club
Columbus 13, Ohio

HEAVEN HILL JERSEYS
BUY YOUR NEXT BULL FROM THIS HERD
With 22 Excellents And Producing Well Over 450 Lbs. Fat Average, on twice daily milking.
Write Us Now
Heaven Hill Farm
Box HD Lake Placid Club, New York

BILTMORE JERSEYS
1,300 in Herd
BULLS For Sale
AT EVERY PRICE
Special Bargains in Top Breeding
To Farmer Breeders
Write Us For The Best
Biltmore Farms
BILTMORE, NORTH CAROLINA

JERSEY BREEDING STOCK
Choice Pedigreed Jerseys by proven sires and out of cows classified for type and good production records. Reasonable prices. Write for pedigrees.
HARMONY JERSEY FARMS, Gustave Schirmer, Owner, John Street, Greenwich, Connecticut.

ROTHERWOOD—Land of Oz
Bred the second Jersey sire to go to South Africa's Blair Atholl Jersey Farm . . . ZANTHRA OF BLAIR ATHOLL, followed ABBOTT OF OZ to Col. Rod Douglas' down there in South Africa.
A. LEWIS OSWALD
P. O. Box 604 Hutchinson, Kansas

PRODUCTION BRED JERSEYS
Increase your production by using a Son of Brampton W.R. Lord Clair, 6 Star Son of Brampton World's Records, Medal of Merit and out of Brampton Lord's Clarivot 926 lbs. B.F., 19,709 lbs. milk in 365 days 2x. Brampton W.R. Lord Clair's dams are showing an increase of 188 lbs. B.F. over their dams. Also could spare a few heifers.
Gold Star Herd.
PLEASANT VIEW JERSEY FARM
Crawfordsville, Iowa

BRYN MAWR FARM
Finds that a constructive program pays. Butonet Golden Challenger has received the Superior Sire Award in herd of Gordon Honfield, Medford, Minn. 11 dtrs. av. 9786 lbs. milk 5% 489 lbs. fat. 10 class. dtrs. av. 82. This is the fourth superior sire bred by Bryn Mawr. Calves of like breeding available. FRANK B. ASTROTH, Rt. 1, South St. Paul, Minn.

PIXY FARM OFFERS
2 SERVICEABLE BULLS entitled to 4 and 5 star ratings respectively. Sire and dam of each is "Very Good." Three nearest sires of each are Superior. Production Bred.
CHAS. S. KELLY, DAVID KELLY Hudson, Wis.

100 Jersey and Guernsey Springers
Cows and Heifers—Special attention to order buying. W. L. RUSH, Springfield, Missouri. Phone 6-1908, Night Phone 151, Rogersville, Missouri.

BARGAINS in registered Jersey bulls and bull calves. Best blood lines. Biltmore and Imported breeding. Prices right. Satisfaction always guaranteed. Send for free list.
ENNIS STOCK AND DAIRY FARM, Festus, Mo.

AYRSHIRES

AYRSHIRES MOST PROFITABLE COWS
4% MILK
Big Milkers - Hardy Rustlers
Good Grazers - Perfect Udders
Write for Booklets
Ayrshire Breeders Association
10 Center St., Brandon, Vt.

IMPROVE YOUR DAIRY HERD
Three of our registered Ayrshires are calving soon. Take a bull calf, use him until 3 years old free. Write to
CORKWELL & PAYNE Mt. Sterling, Ohio

AYRSHIRE BULL CALF
Born June 20—splendid individual—Sire and Dam type classified "Excellent." Sire approved for both production and type. Dam's first record 8,593 pounds milk 4.1 per cent 355 pounds fat. Second record 9,723 pounds milk 4.2 per cent 406 pounds fat, 2 time milking, 305 days. Write for pedigree and price.
STRATHGLASS FARM, Box 71, Port Chester, N.Y.

REGISTERED AYRSHIRE BULL
Born 4-1-50. Sire Preferred Pedigree. Dam a 2 yr. old gave 12,046# M 4.32% 520# B. Fat. Also some bred heifers.
GREENFIELD FARMS
330 S. 76th St. West Allis, Wis.

FRANK LUHRS DAIRY COW MARKET
We have a large selection of high-producing Northern cows on hand.
SOUTH ST. PAUL, MINN. La Salle 1456

Ayrshire Bull Calves
Bred for Type, Production, Test, Disposition and Longevity by Preferred Pedigreed bulls; from tested and typed dams. Let your next herd sire come from Carefree; let him convince you.
CAREFREE FARMS
Traditionally The Best
New Haven Indiana

AYRSHIRE BULL CALVES
FUTURE HERD SIRES
by Double Approved Sires; from tested and classified dams.
HOOSIERLEA FARMS
Franklin, Indiana

HOLSTEINS

ECONOMICAL FEEDERS
Large feed capacity enables Holsteins to utilize large amounts of home-grown feeds to maintain top production. They have the capacity for greater Vitamin D intake and convert carotene into more true Vitamin A than do the smaller breeds.
There's a FUTURE with HOLSTEINS
HOLSTEIN-FRIESIAN ASS'N OF AMERICA • Brattleboro, Vermont •

HALLROSE PROGRESSOR
Gold Medal Herd Sire
Classified "Excellent"

We Offer a Son of "Progressor" From Quite An Unusual Cow

Hallrose Progressor grows in popularity every day. His daughters are all that everybody expected in type, test, production and udders, and future years will be increasingly filled with reports of them. Any son of Progressor is a bull worth investigating, but the bull we offer this week is from quite a remarkable cow.

The bull, himself, is Ear Tag 8819, born October 8, 1950, a splendid calf whose 6 nearest tested dams average 899 lbs. of fat each.

His own dam is Carnation Heilo Inkabess. Perhaps you have heard of her. Her average test is 4.2%. She is very attractive and has no less than 3 All-American paternal sisters and brothers. On twice-a-day milking she produced 15,857 lbs. of milk and 663.4 lbs. of fat. Her sire has been All-American bull three different years, and his sire is Governor of Carnation, who now has 25 thousand pound daughters.

The dam of Ear Tag 8819 is from a 994 pound daughter of a 1011 pound cow, and her sire is from twice Junior Champion 1000 pound cow.

We recommend you write for full details.

Carnation Milk Farms
Address: CARNATION MILK FARMS, 1508 Stuart Building Seattle 1, Washington

CARNATION BRACELET HOMESTEAD

This month we offer a son of Carnation Bracelet Homestead, born July 3, 1950. This calf is damed by Ormsby Segis Bessie Pontiac who has an A.R. record of 670.7 lbs. of fat and 18,740 lbs. of milk on 2x milking as 4 year old.

This is a splendid type calf whose sire and dam are both officially classified "very good."

For pedigree, pictures, and price write:
STOFFELL'S MILK FARM
Route No. 12 Knoxville, Tenn.

HOLSTEIN and GUERNSEY
Choice selected Grade Springer Cows and Heifers. Large supplies always available. Recently Negative to T.B. and State Laboratory Bang's test. Truck lots or carloads. Quotations on request. We do not handle any young calves.
"Private Daily Sales"
L. F. BROWN & COMPANY
3149-57 Spring Grove Ave., Cincinnati 25, Ohio
Phones Kirby 5041-5042 Established 1940
Ohio's Largest Licensed & Bonded Distributors

$709.17 Above Feed Costs!
Yes, that's what the dam of:
SIR PAGANOK MERCEDES GINGER
has done in the first 355 days of her current lactation. Her first 6 lactations average:
330 days 14287 lbs. milk 4.3%
614.9 lbs. fat
And he's a son of Plus Proven PAGANOK GINGERBREAD MAN and a double grandson of Plus Proven SIR PIETERTJE ORMSBY LADY.
He's for sale and ready for service.
SCOTT MEYER & SONS Hannibal, Mo.

SORRY, but we're out of
SERVICEABLE AGE BULLS
See us now for your future herd sire.
Calves for Sale or lease.
FOOTHILLS HOLSTEIN FARM, Papillion, Neb.

Your Future Herd Sire?
Would you like a son of a proven sire that increased production 146 lbs. of butterfat, test .15% and milk 3662 lbs. on 28 of his first 28 daughters to freshen? Would you like a son of a cow that was out of the 16th leading honor list sire in the breed in 1949? Would you like your bull to be of excellent type and large for his age? Would you like to have his 15 nearest dams without a skip to average 631 lbs. of butterfat? If you are interested in these things in a herd sire, we think we have one that will be the right kind. He was born April 22, 1950. He is priced reasonable and we invite your inquiry.
MEDSKER FARMS Sullivan, Indiana

10 HEAD OF OUR
FOUNDATION COWS
Records from 500 to 800 pounds of fat, the best of type. Bred to outstanding sires. Must sell to make room for heifers coming into herd.
BOTTEMA FARMS Bridgeport, Indiana

2 TOP NOTCH BULL CALVES 2
Born in February 1949. Both by Pabst Embel Wayne, 4% proven sire, whose A.R. daughters are making exceptional records and testing from 3.7 to 4.1%. No. 1 Dam, Lashbrook Lash Ormsby (V.G.), 537 lbs. fat in 305 days, 3.7%. Nine nearest dams ave. 4% test. No. 2 Dam, Lashbrook Patricia Ormsby, 452 lbs. fat, 305 days, 3.7% test. Both extra good individuals, priced $500 and $500 respectively. Send for pedigrees and photos.
A. J. LASHBROOK Northfield, Minnesota
(Accredited and Certified Herd)

REGISTERED HEIFERS FOR SALE
We have some excellent heifers and heifer calves for sale. Dictator and King Bessie breeding. Good individuals from good producing dams. Write or come to the farm.
HAWTHORN FARMS, Libertyville, Illinois

DERRIDGE FARM
Offers a good Registered Holstein Bull born January 1949. Dam has two records of nearly 700 lbs. fat on twice a day. Sire, a Silver Medal production sire, has daughters up to 692 lbs. fat, first lactation.
Also a number of younger calves.
Write or visit us.
JOHN R. DERRER & SONS Mt. Carroll, Ill.

WE HEARTILY RECOMMEND

Ear Tag 402: Fine type and richly bred young bull. Sired by Carnation Hello Revelation, whose 6 nearest tested dams average: Fat 3654 1042, Milk 25388, test 4%.

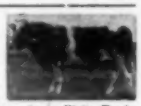
Dam, Rawleigh Bessie Dean, a daughter of Posch Ormsby Fobes Dean, sire of Rawleigh Della Ormsby Dean. Fat 3654 929. Milk 26618, test 3.6%. Dam of E.T. 402 was first prize 4-yr-old, Grand Champion, best-uddered cow, Stephenson Co., Ill., Fair 1950. First 93 days current lactation, Fat 279, Mi 6641, average test 4.2%.

In our estimation a splendid buy. Write for full information.

THE W. T. RAWLEIGH COMPANY

Freeport Illinois

2 GREAT HERD SIRES



Sons of Montvic Rag Apple Sovereign and Dunloggin Lochinvar Prince —bull calves of this breeding from top cows $200.00 and up. Write R. A. Page, 500 Peshtigo Court, Chicago.

UNADILLA FARM Chadwick, Ill.

Carnation Bred Bulls

Are now using Carnation Royal Gemm on the herd resulting from the use of 5 previous Carnation bulls. We have bred the dams back of this herd for years and they have been in DHIA work since 1918. We feel we have bulls well worth your consideration born from Sept. on to date.

C. E. Hurlbert EUREKA FARMS Stockton, Ill.

90 Head of Dairy Cows

HOLSTEINS, GUERNSEYS and HEIFERS

for your selection on hand at all times. Come to Dodge County, Wisconsin, 50 miles northwest of Milwaukee, where heavy producing Holstein cows are raised from foundation purebreds. Priced to meet your demands, one or a carload. We have transportation for delivery to your farm.

Write or Phone

BEN W. NEHLS, Route 3, Juneau, Wisconsin

WISCONSIN BREEDERS SALE

MONDAY, JANUARY 29th (Clyman Farms), WATERTOWN, WIS. 75 head of choice Registered Holstein Cows, heifers, calves, and yearling bulls. Cows with records up to 600 lbs. fat, 2 yr. olds with records above 400 lbs. fat. Bulls from Curtiss Candy and Elmwood Farms. A place to buy the best.

BAIRD & DARCEY, Mgrs.

Waukesha and Watertown

Good Dairy Cattle For Sale

Come to Barron County for good productive, healthy, commercial dairy cows and foundation pure breds. Our county associations cooperate to render sales service to buyers. Write BARRON CO. COOP. DAIRY CATTLE SALES ASS'N, BARRON, WIS.

Buy More U. S. Savings Bonds

BARRON COUNTY, WIS.

"Where Quality Holsteins Are Bred"

Our co-operative sales service can fill your needs for better Holsteins from one of the outstanding dairy centers of the nation.

BARRON COUNTY HOLSTEIN BREEDERS ASSOCIATION, Box 474, Barron, Wis.

Dairy Cows For Sale

If in need of good dairy cows, selected from Wisconsin's oldest and most thickly populated Holstein territory, write FRANCIS DARCEY.

Tri-County Holstein Association

Watertown Wisconsin

WISCONSIN Institution Holsteins

With over five generations of our own breeding and under ordinary farm care and 2-time milking. Noviceo M.B.B. Alberta 2632612 is National Champion Jr. 4-yr.-old with 1007.1 lbs. fat and the first cow in the nation to produce over 1000 lbs. fat under 5 years of age on 2-time milking.

This B. B. Creator line of breeding is found in nearly all our herds. This combined with our Reformatory, Wisconsin Admiral Burke breeding is proving that consistent line breeding and selection has taken the gamble out of selecting a new herd sire.

For information and new bull list, write

W. W. KINYON, *Farm Supervisor*

STATE DEPARTMENT OF PUBLIC WELFARE

State Capitol, Madison, Wisconsin

DANE COUNTY HOLSTEIN BREEDERS COOP. ASSOCIATION

Offers special sales service on grade and purebred cattle from one of Wisconsin's largest dairy counties where over 13,000 cattle are on DHIA test and more than 15,000 are bred artificially.

For information write

FRANK E. CAIRNS, Fieldman

353 W. Johnson St., Madison, Wisconsin

Office phone Dial 6-0513 Residence Dial 3-5535

HOLSTEIN CATTLE

Purebreds and grades, many of Pabst, Carnation or Maj Apple blood lines. Selected from the best herds in the state of Wisconsin where better purebred sires have been used for over 30 years. We cover fifteen of the leading dairy counties in Wisconsin.

Services - W. L. Baird - Arthur Bennett - Harvey Swarts - Ed Weyker - Frank Swartz - Don Stauffer at your disposition—can handle orders for truck or carloads. Telephone 3644, Waukesha, Wis., or write for information to

INTER-COUNTY DAIRY CATTLE ASSOCIATION

Waukesha, Wis.

GOOD HOLSTEINS FOR SALE

Cows . . . Heifers . . . Serviceable Bulls

For good Holsteins, either registered or grades—one or a carload—c me to Jefferson County, Wis. Let us quote you prices on quality cattle from healthy herds. Free fieldman's service.

JEFFERSON CO. HOLSTEIN BREEDERS' ASS'N

Fort Atkinson Wisconsin

Grade and Purebred Holsteins

Richland County's best herds. For fieldman service contact — RICHLAND COUNTY HOLSTEIN-FRIESIAN ASSOCIATION. C. VICTOR GOODRICK, Secretary.

Phone 2340 LONE ROCK, WIS.

Choice Holsteins For Sale

Come to the Fox River Valley for good Holstein cattle, either grade or purebreds. We have eight counties in which to select from in the heart of America's Dairyland. Fieldman service.

FOX RIVER VALLEY HOLSTEIN-FRIESIAN ASSOCIATION

Math Neuleman, Fieldman, Kaukauna, Wis.

GUERNSEYS

New Guernsey Book FREE

Send for new 20-page, "Own Guernseys in 1951" — detailed information on bettering your income with Guernsey cattle and premium-priced GOLDEN GUERNSEY Milk. Don't delay — it's FREE!

THE AMERICAN GUERNSEY CATTLE CLUB

102 Main St., Peterborough, N. H.

REAL HERD IMPROVER

ROCKINGHAM FORECAST—born June 10, 1949. His seven nearest dams average 670 lbs. fat. Sire —Rockingham Peerlight, he traces 12 times to Langwater Holliston the sire of "Lovity." Dam— Rockingham Prena, she traces 15 times to Langwater Holliston, she has a record of 11161-561-Jr2C. Here is good type and production. Write for details and prices.

D. G. Tenney, Owner Salem, New Hampshire

ROCKINGHAM FARM

FOREMOST GUERNSEYS

FOREMOST IN NAME and BREEDING FAME

Head your herd with a Foremost bull that is backed by generations of the breed's best bloodlines—a bull that is linebred for both type and high production. We always have for sale some very desirable young bulls. Write us or better still come to the farm before you buy your next herd sire.

FOREMOST GUERNSEY ASSOCIATION, INC.

Hopewell Jct. (Duchess County), New York

J. C. Penney, Pres. W. K. Hepburn, Mgr.

FOR SALE – Bull

born Dec. 1949. Sired by Coldspring's Romulus Anchor 15 AR daughters, satisfactorily proven both for type and production. Dam made 14175-702 8r6C. Grandson of Foremost Peacemaker 172 AR daughters and Langwater Romulus All. A choice individual. Also a few well bred heifers.

TARBELL GUERNSEY FARMS

Smithville Flats New York

IDEAL FARMS PUREBRED GUERNSEYS

Why not be the proud owner of your own herd sire? We have many out of 700, 800, or 900 lb. dams. Breeding stock you are looking for. State your wants, better yet, come and see for yourself. The World's Greatest Production Herd. Prices reasonable.

IDEAL GUERNSEY FARMS

AUGUSTA NEW JERSEY

FOR SALE Grandsons of Langwater King of the Meads and Langwater County Squire and out of Bournedale Rex and Langwater Africander bred dams.

TOM COOPER FARM Ardmore, Okla.

1904 — FRITZLYN FARMS — 1950

FRITZLYN FLASHY JIM, dropped 12/25/49. Sired by Fritzlyn Valor's Successor, A.R., son of Valor's Fashion—32 A.R. daughters. Dam, Fritzlyn Faithful—3 A.R. records, two of them over 730, 5 A.E. daughters.

Dam: FRITZLYN FLASHY GEM A.R. 13,544 milk and 731 fat Jr. 2C. Daughter of Caumsett Flashlight by Caumsett Dynamo. Dam by Antietam Gypsy King, 48 A.R. daughters, sire of Fritzlyn King's Jeannette M. 19,300, F. 897. Sold for $6,000.

Reasonable Price

FRITZLYN FARMS Pipersville, Pa.

BRANDTJEN FARMS

breeding for: LONGEVITY, TYPE and PRODUCTION. 18 years of herd building. 14 years of A.R. herd testing. 44 cows in the herd with 86 records, average 440# BF, with 5.16% av. test. With bull calves arriving 3 to 1, this is an opportunity for you to make our bull buck your bull opportunity. Several calves from 600# record dams on 2x.

BRANDTJEN FARMS, Farmington, Minnesota

ESKDALE FARMS GUERNSEYS OFFER:

Sons of our Riegeldale bulls — Riegeldale Conqueror's Baron and Riegeldale Ben's Bright Lad. All out of high producing dams with AR records.

Pedigrees on Request.

Vaccinated Bang's Certified

ESKDALE FARMS, Box 512, Neenah, Wis.

BETTER GUERNSEYS

Purebred and grades with outstanding production and type. Purebred bulls that will increase the value of your herds. T.B. and Bang's tested. Service to buyers is free. JEFFERSON CO. GUERNSEY BREEDERS' ASSN., Fort Atkinson, Wis.

GOOD GUERNSEYS FOR SALE

Barron County is a choice field to find those production bred cows and heifers in the Guernsey breed. Thirteen full time testing associations operatin+ within the county. Buyers assisted by Guides and Sales Service. Let us fill your order.

BARRON COUNTY GUERNSEY BREEDERS ASSOCIATION BOX 474, BARRON, WISCONSIN

QUALITY GUERNSEYS

Registered and Grade Females of All Ages and Registered Bulls

Come direct to breeders to buy. Several hundred herds to select from. Fieldman will assist you. TB and Bang's tested. Official Calfhood Vaccination Program in this County.

WAUKESHA COUNTY GUERNSEY BREEDERS' ASSOCIATION, Box 14, Waukesha, Wis.

Young Bulls For Sale

Backed by type breeding and records. We are offering for sale sons of our herd sires, Green Meads Proud Gallant, Sierra Manor Magnet, R. Lane's Proud King. Sires' dams have records from 614 to 926 fat. Also some choice heifers. Write today for full information.

R - LANE FARMS, BASSETT, WISCONSIN

J. H. Rustman, Owner Lewis M. Meyer, Manager

HERD SIRE PROSPECTS

Sired by McDonald Farms King's Dairyman (sire, Myhaven King and out of McDonald Farms Delilah, 602 lbs. butterfat (3X); also, Woodacres Royal Dairyman (sire, Douglaston Prince Royal and out of Rockingham Recollect, 627 lbs. butterfat Jr. three-year-old). These youngsters are out of cows with good type and production. Priced to sell. Write for sales list and information.

HOARD'S DAIRYMAN FARM

Fort Atkinson, Wisconsin

GUERNSEY BULL CALVES

From proved sires and high production dams at prices you can afford to pay. Free leaflets on Selective Breeding Program.

BURTON LANE FARM

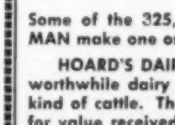
Box 552 Lake Forest, Illinois

30 HEAD REGISTERED AND GRADE GUERNSEYS FOR SALE

Seventeen cows; three bred heifers; ten open heifers and calves. Sire—Rock Creek Guardsman, son Rock Creek Petros and Rock Creek Madwatch—14262-749-DDD. 2nd place, 14126-766-AAA. 8th place. Calfhood vaccinated. DHIA records.

L. E. DENNIS, Sr., 1511 6th Ave., Sterling, Ill.

SONS OF PROVEN SIRES AVAILABLE



Pabst Regal "Excellent" Gold Medal Proven Sire

Wisconsin Admiral Burke Lad's (V.C.) transmission of high production is inherited by his sons, Pabst Roamer (Ex.) and Pabst Regal (Ex.), as shown by these averages of their daughters—Burke's 64 daughters average: at 2 yrs. 4 mos. 17,094 m. 3.67% 625.2 f. 3X. Pabst Roamer's 52 daughters ave.: at 2 yrs. 5 mos. 17,857 m. 3.67% 655.3 f. 3X. Pabst Regal's 33 daughters ave.: at 2 yrs. 5 mos. 18,240 m. 3.77% 686.8 f. 3X.

Young bulls carrying Burke breeding are available to head your herd. Semen also available. Write for terms.

PABST FARMS, Inc. Acc. & Neg. Oconomowoc, Wis.

"I Want to Buy a Bull"

"We Need a Few Foundation Females"

Some of the 325,000 dairy farmers who read HOARD'S DAIRYMAN make one or both of those statements every day in the year.

HOARD'S DAIRYMAN readers are the largest good market for worthwhile dairy cattle. Thousands of them are looking for your kind of cattle. They want good ones and they are willing to pay for value received.

Sell them the good animals you have for sale. Tell them about your herd and the animals you offer with an advertisement in HOARD'S DAIRYMAN. The rates are low. Write us today for complete information.

HOARD'S DAIRYMAN Fort Atkinson, Wis.

COMPLETE DISPERSAL Woody Nook Farms PUREBRED GUERNSEYS

GLEN ELLYN, ILL. . . . SATURDAY . . . FEBRUARY 10, 1951

12 Noon in Heated Quarters. Farm Sold, All Animals Must Sell.

65 HEAD COWS, HEIFERS, CALVES

Langwater Slogan (Langwater Valiant-Slogan's Lady Aster of Langwater 636.3 fat).

Langwater Peter (Langwater Merrymaker-Langwater Honoria 626 GG 397.4 fat) blood predominates.

Most of the mature cows have AR and DHIA records with excellent type and marvelous udders. The heifers are a splendid group out of the above AR cows. The herd is in wonderful breeding condition. Only by seeing this great array of cattle can they be appreciated. Herd TB accredited and again will be blood tested before sale. Write for catalog.

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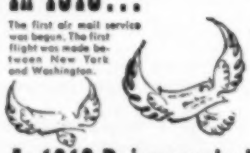

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Brucellosis in Swine

Precautions and sanitary practices must be carefully followed if you wish to maintain a clean herd or free an infected one.

J. W. BAILEY, D.V.M.

DO YOU still think that brucellosis or Bang's disease doesn't amount to very much in swine? Well, maybe you're right and then again maybe you're wrong. In order to decide fairly, you'll have to consider the facts. Present day evidence indicates that there are at least five big reasons why this disease is costly and important and dangerous all at the same time.

It is costly because it can be to blame for a lot of breeding troubles. Recent work at the University of Wisconsin showed that it was why a great many sows and gilts showed up as "repeaters". When boars are infected the localization of infection in the testicles is apt to make them more or less completely sterile.

It is important because it is easily spread by the act of breeding. A single diseased sow can infect a boar that will afterward give the disease to every sow he services. This makes swine brucellosis most important in the males, and enables all the breeding stock on a farm to become diseased in a single breeding season.

Pigs May Be Born Weak

It is also important because even though a diseased sow does become pregnant she is likely to abort her pigs ahead of time. Even when litters are carried full term, the pigs are often born so weak that they die within a few days.

It is dangerous because the germs may be picked up by cattle to cause trouble in those animals. We don't know how often this happens, but we do know that it happens. We also know that cattle infected with swine brucellosis will react in some degree to the blood test for Bang's disease in cows.

It is even more dangerous because the germs may be picked up by human beings to cause undulant fever. In fact, swine brucellosis probably causes more undulant fever of an acute nature today than does Bang's disease of cattle. The actual reason is unknown but the swine type of germ seems stronger and more able to overcome human resistance. At any rate it is recognized as being able to penetrate unbroken skin. Along the same line it is well known that many cases of undulant fever can be traced back to the slaughtering of hogs and bare-handed handling of warm meat. Since the handling of warm cattle carcasses seldom results in human infection, circumstantial evidence is against the swine type of germs.

All arguments aside for the moment, let's assume that swine brucellosis really is a costly and important and dangerous disease. Let's further assume that you don't have the disease on your place and that you don't want it there.

Signs of an Infected Boar

Well, you can pay a lot of attention to selecting a boar. Animals with either shrunken or swollen testicles may be advertising that they are infected with brucellosis. Those that are lame or suffering from swollen leg joints may be doing the same thing. Even if they appear all right, they may be dangerous if they have been "changed" around the country and seen service on several different farms.

With the above being true, your best bet may be a young boar that has never been used for service at all. Even this isn't a guarantee of freedom from disease, since germs may be eaten to cause infection, too. Consequently, a blood test is highly desirable at the time a boar is purchased. Even if negative he had better be isolated for 30 days and retested before being allowed to breed any sows, since he might be in the "coming down" stage when purchased. An extra safety measure consists of getting the animal from a farm where the entire herd has been blood tested and found free of brucellosis. In fact, most authorities believe a clean herd test is more important than a negative individual test.

The same sort of procedure is desirable when sows or gilts are bought. For that matter, even home-raised females should be checked pretty closely before a clean boar is used on them. It only takes one service to infect a boar, and you might have brucellosis in the hog lot without knowing it.

The Purdue Plan of Control

If you already have the disease on your farm, there is still a way of handling it. This is because work at Purdue University has shown that disease-free gilts and boars can be produced even when the parents have brucellosis. It's easily done and makes use of the fact that young animals are pretty much immune to Bang's.

The job starts with separation of pigs from dams at weaning time and keeping them away from older animals the rest of their lives. This is important because they are more susceptible after weaning and may become infected if exposed to brucellosis germs. Pigs to be kept for breeding purposes are blood tested at weaning time and those that pass the test are placed on clean ground and raised in strict isolation. It is recommended that pigs be weaned by the time they are eight weeks old.

If you aren't already entertaining the disease, you won't be interested in the Purdue plan. Instead you'll probably be interested in one made up of five points mentioned earlier:

1. Examine breeding stock carefully before purchasing them.
2. Don't buy boars that have been used on several farms.
3. Blood test males and females alike at purchase time.
4. Isolate and retest them in 30 days before breeding.
5. Get them from farms where the entire herd has been blood tested and found negative.

If you're in the swine business you'd better think twice about this prevention angle, for swine brucellosis is a lot commoner than many people think. A nickel's worth of prevention may save you a hundred dollars worth of trouble. Whatever you do, don't think of this disease as strictly the other fellow's problem. It may be yours tomorrow, so be careful.

The damage parasites do to farm animals can be compared with a chronic disease: the animals eat well, but are not as strong as they should be and fail to gain weight.

Veterinary Column

J. W. BAILEY, D.V.M.

Ringworm of Cattle

The most striking symptom of this disease is the appearance of bald spots of various sizes. They are commonest around the eyes and ears, but may show up on any part of the body. The bald areas are dry and covered by a gray crust, usually having a few broken hairs remaining in them. They are itchy, and affected animals may rub them until bleeding and thickening of the skin is highly suggestive of mange. The disease usually affects only a few younger animals but if neglected it may spread through an entire herd, affecting young and old alike. It is commonest during the winter months, although it may be encountered during any season of the year.

Cause

The cause is a mold-like fungus called Trichophyton tonsurans. It is highly contagious and may even attack man, so care must be used while working around infected animals. Dark and dirty stables help the development and perseverance of this disease in a barn.

Diagnosis is usually made on the basis of the typical gray and crusty bald spots. When there is a possibility of mange, skin scrapings may be examined under the microscope. Finding the spores and threadlike growths of the fungus in such a manner is positive proof of ringworm infection.

Treatment

The first thing to do is to isolate affected animals until the outbreak is cleaned up. This procedure helps to prevent the spread of infection to healthy beasts. Being easily killed, many effective treatments are available for ringworm. Regardless of what is used, the first step should consist of thorough scrubbing with mild soap and warm water to remove the outer scabs from the lesions. The fungus is then exposed so efficient treatment is possible. Tincture of iodine is an old remedy and should be applied three or four times daily. A saturated solution of salicylic acid is also good, as is tincture of phemerol. Whitfield's ointment, lime-sulfur dip, or some of the newer chemical agents are effective, too.

Prevention properly starts in the fall with thorough scrubbing and disinfection of stables before animals are brought in for the winter. Whitewashing after that will also help, as will plenty of light from windows. Since dampness is favorable for the growth of ringworm, good ventilation is highly important in stables, too. Pens that have been occupied by infected animals should be thoroughly cleaned up before others are brought in.

VACCINATING FOR BANG'S

On or about March 1, 1951, we are going to move to a farm where there has been a history of Bang's disease, although the owner of that farm assures us there has been no trouble with Bang's for the last two years.

Please advise us concerning the proper procedure in caring for our cows that have never had Bang's and have never been vaccinated against it.

Should adult cows, including first calf heifers, be vaccinated? Should they be left open, that is, unbred until after vaccination? If vaccinated, will they drop the germs every time they freshen the rest of their lives?

What precautions should we take in cleaning the barn and lots? Will the germs be present in the pastures?

Should calves be vaccinated. Should they be tested before breeding? Should all animals be tested regularly? Can any competent veterinarian do this work?

Wabash, Ind. E. V. C.

We will try to answer your questions in order.

1. We do not recommend vaccinating adult cows unless considerable infection is already present in a herd.

2. In case adults are vaccinated, it is best if they are not over five months along in pregnancy.

3. Vaccinates are not generally believed to drop germs afterward, but they may remain as permanent reactors to the blood test.

4. The barn should be thoroughly cleaned and then scrubbed with a solution made by dissolving a pound of lye in each 15 gallons of water. Each fifteen gallons will be about enough for ten feet in a barn thirty feet wide.

5. It is unlikely that live germs will remain for long in lots and pastures, since they are soon killed by drying and sunlight.

6. We believe in calfhood vaccination in infected areas.

7. We also believe in testing the vaccinates before breeding them.

8. We are in favor of regular testing of all animals in order that a certified Bang's-free herd can be established.

9. Any competent veterinarian can do this work.

WORMING PIGS

Somebody told me that blue vitriol is good for worming pigs. Could you tell me how much per pig to feed? If it is good for worming pigs, at what age should you worm pigs?

Chilton, Wis. G. P.

We do not recommend the use of blue vitriol for worming pigs.

A better plan consists of mixing one pound of sodium fluoride with 100 pounds of ground feed and feeding the pigs all of it that they will eat in one day. Then remove any that is left and destroy it. Do not let chickens eat any of this feed for it will kill them, and do not mix this feed with slop or water.

The best time to worm pigs is two weeks after they are weaned but the job may be done at any time.

TUMORS IN POULTRY

What causes hens as well as cockerels to have tumors? Sometimes there are several in one hen. They get quite large. I have seen some 2½ inches through the diameter, three of these in one hen. Could too high protein feed cause it?

Milton Junction, Wis. Mrs. F. K.

The usual cause of tumors inside young chickens is the intestinal form of range paralysis or the avian leukosis complex. The cause is not definitely known, but mingling of young and old chickens enables the younger birds to get the disease from older ones. It is not related to the feeding of high protein.

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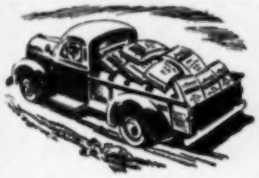

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